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Manipulating Musical Surface: Perception as compositional material in live looping and organ with electronics

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# **Manipulating Musical Surface**

**Perception as compositional material in live looping and organ with electronics**

**Pamela Hulme**

Submitted to the University of Huddersfield in partial fulfilment of the requirements for the  
degree of Masters by Research in Composition

January 2020

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## Abstract

This research project into manipulating musical surface explores perception as compositional material, specifically in relation to my creative practice with live looping and organ with electronics. The portfolio comprises a collection of eight compositions and two improvisations, as well as supporting essays and further texts which outline more practical outcomes of my research, including documentation of the system which I developed to notate live looping. The first essay, *Extending the Pipe Organ with Electronics - towards a symbiotic relationship between the analogue and the digital*, situates this project within the landscape of current practice and research on organ and electronics, with a particular focus on transferability between different instruments and contexts which is important to my work. The second essay, *Live looping – a compositional approach*, explores the possibility of perception as musical material in this practice through examples from a spectrum of contemporary loop artists as well as detailed examples taken from the looping compositions which form part of this portfolio.

Eight printed scores with introductory notes and performance directions are complemented by a complete set of audio recordings of the works, audio recordings of additional improvisations, as well as a selection of videos and video excerpts as supporting evidence. The majority of the recordings submitted were performed by myself as an integral part of the methodology running through the project. As a mixed media collection this portfolio documents a period of multidisciplinary research into my practice as a composer, improviser, and performer.

## Acknowledgements

Firstly I would like to thank my supervisor Prof. Aaron Cassidy for his guidance and support throughout this research project.

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I am grateful to the many organists and organist-composers who have given up their time to discuss this research with me. There are too many names to mention here, but I would specifically like to thank Michael Bonaventure, Dominik Susteck, Jakob Lekkerkerker and Hans Fidom for letting me interview them. Particular thanks go to Maximilian Schnaus and Catherine Ennis for their ongoing support, coaching, and for workshopping some of the organ music in this portfolio, and to Michael Burt for inspiring me to sit still for long enough.

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Finally, a special thank you to my family and the deepest thank you of all to Isabel Phillips. A lot happened alongside this research project and I am grateful that I was able to channel some of those experiences into this music. Acts of remembrance for each of my parents are woven into this composition portfolio but I would like to dedicate it to my Mum, whose approach to her illness was nothing but inspiring and whose final days were the most profound experience of my life.

## List of works submitted

### Works for live looping

*Wer nur den lieben Gott lässt walten*: Chorale suite for organ and live looping (2017, revised 2019) c. 12'

- I. *die schweren Sorgen*
- II. *ein wenig Stille*
- III. *der rechte Wundermann*

*Wenn?, wenn?; Warum?* for soprano and loop artist (2017, revised 2019) c. 5'

*Es ist gewisslich an der Zeit*: Chorale suite for organ and live looping (2018) c. 15'

- I. *"Ich bin!"*
- II. *"Bist du?"*
- III. *"Wer bin ich?"*

*The Tyger* for soprano and loop artist (2018) c. 5'

*Bach Remix - BWV 542* for organ and live looping (2017, revised 2019) c. 5'

### Acoustic works

*neural (dis)tortion* for clarinet and imaginary loop machine (2018) c. 5'

*I lift my eyes and see shadows on the hills* for organ & acoustic space (2018) c. 7-9'

*S\_a \_ \_ / \_ y / \_ \_ (I)* for violin (2019) c. 3'

### Improvisations

*S\_a \_ \_ / \_ y / \_ \_ (II)* for organ and live electronics (2019) c. 6-7'

Improvisation on the Utopia Hyperorgan - Orgelpark, Amsterdam (2019) – c. 6'

## Performance history of submitted works

*Wer nur den lieben Gott lässt walten*: Chorale suite for organ and live looping (2017 / 2019)

- Pam Hulme, Golgothakirche, Berlin (Sep 2017) – Service
- Pam Hulme, Pfingstkirche, Berlin (Jun 2018) – Concert
- Pam Hulme, Auferstehung Friedhofskapelle, Berlin (Jun 2019) – Concert
- Pam Hulme, Zionskirche, Berlin (Aug 2019) – Concert
- Pam Hulme, Pfingstkirche, Berlin (Aug 2019) – Service
- Pam Hulme, St. Thomas', Heptonstall (Sep 2019) – Concert

*Wenn?, wenn?; Warum?* for soprano and loop artist (2017, revised 2019)

- Brieann Pasko (Soprano), Pam Hulme (Loop Artist)  
Golgothakirche, Berlin (May 2017) – Service
- Brieann Pasko (Soprano), Pam Hulme (Loop Artist),  
Pfingstkirche, Berlin (Apr 2017) – Service
- Brieann Pasko (Soprano), Pam Hulme (Loop Artist)  
Pfingstkirche, Berlin (Apr 2019) – Service
- Brieann Pasko (Soprano), Pam Hulme (Loop Artist)  
Pfingstkirche, Berlin (Jun 2019) – Concert
- Brieann Pasko (Soprano), Pam Hulme (Loop Artist)  
Pfingstkirche, Berlin (Sep 2019) – Recording session
- Brieann Pasko (Soprano), Pam Hulme (Loop Artist)  
Zionskirche, Berlin (Aug 2019) – Concert

*Es ist gewisslich an der Zeit*: Chorale suite for organ and live looping (2017, revised 2018)

- Pam Hulme, Golgothakirche, Berlin (Nov 2017) – Service
- Pam Hulme, Sophienkirche, Berlin (Nov 2018) – Service
- Pam Hulme, Auferstehung Friedhofskapelle, Berlin (Nov 2018) – Concert
- Pam Hulme, St. Thomas', Heptonstall (Jun 2019) – Concert
- Pam Hulme, Zionskirche, Berlin (Aug 2019) – Concert

*The Tyger* for soprano and loop artist (2018)

- Brieann Pasko (Soprano), Pam Hulme (Loop Artist)  
Pfingstkirche, Berlin (Jun 2018) – Concert
- Brieann Pasko (Soprano), Pam Hulme (Loop Artist)  
Pfingstkirche, Berlin (Sep 2019) – Recording session
- Brieann Pasko (Soprano), Pam Hulme (Loop Artist)  
Zionskirche, Berlin (Aug 2019) – Concert

## Performance history of submitted works (continued)

*Bach Remix - BWV 542* for organ and live looping (2017, revised 2019)

- Pam Hulme, Pfingstkirche, Berlin (Oct 2017) – Concert
- Pam Hulme (organ), Okami (beatboxing), Pfingstkirche, Berlin (Jul 2018) – Concert
- Pam Hulme, Auferstehung Friedhofskapelle, Berlin (Nov 2018) – Concert
- Pam Hulme, Golgothakirche, Berlin (Jun 2018) – Service
- Pam Hulme, Pfingstkirche, Berlin (May 2019) – Concert
- Pam Hulme, Epiphaniienkirche, Berlin (Jun 2019) – Concert
- Pam Hulme, St. Thomas', Heptonstall (Jun 2019) – Concert
- Pam Hulme, Zionskirche, Berlin (Aug 2019) – Concert
- Pam Hulme, Pfingstkirche, Berlin (Aug 2019) – Service

*neural (dis)torsion* for clarinet and imaginary loop machine (2018)

- Richard Haynes, St. Paul's Hall, Huddersfield University (Jan 2018)

*I lift my eyes and see shadows on the hills* for organ and acoustic space (2018)

- Maximilian Schnaus, Sophienkirche, Berlin (Feb 2018) - Service
- Pam Hulme, Pfingstkirche, Berlin (Apr 2018) – Meditation for Good Friday
- Pam Hulme, St. Paul's Hall, Huddersfield University (Mar 2018) - Concert
- Pam Hulme, Christ Church, Barnston (May 2018) - Service
- Pam Hulme, Union Chapel, London (Mar 2018) - Service
- Pam Hulme, Auferstehung Fredhofskapelle, Berlin (Nov 2018) – Concert
- Pam Hulme, Sophienkirche, Berlin (Nov 2018) – Service
- Pam Hulme, Epiphaniienkirche, Berlin (Jun 2019) – Concert

*S\_a\_\_/\_y/\_\_ (I)* for violin (2019)

- Sarah Saviet, St. Paul's Hall, Huddersfield University (Mar 2019)

*S\_a\_\_/\_y/\_\_ (II)* for organ and live electronics (2019)

- Pam Hulme, Pfingstkirche, Berlin (Apr 2019) – Meditation for Good Friday
- Pam Hulme, Pfingstkirche, Berlin (May 2019) – Concert
- Pam Hulme, Epiphaniienkirche, Berlin (Jun 2019) – Concert
- Pam Hulme, St. Thomas' Church, Heptonstall (Jun 2019)

Improvisation on the Utopa Hyperorgan - (2019)

- Pam Hulme, Het Orgelpark, Amsterdam (Aug 2019) – Concert

## Contents of audio and video documentation

### ***Wer nur den lieben Gott lässt walten:***

Audio:

1. *I die schweren Sorgen*
2. *II ein wenig Stille*
3. *III der rechte Wundermann*

Organ and live looping: Pam Hulme

Recorded in concert at Zionskirche, Berlin, 25.08.2019

Video:

4. *I die schweren Sorgen*
5. *II ein wenig Stille*
6. *III der rechte Wundermann*

Organ and live looping: Pam Hulme

Recorded in rehearsal at St. Thomas', Heptonstall, 20.20.2019

Supporting video evidence filmed in the organ gallery with incomplete sound

### ***Wenn?, wenn: Warum?***

Audio: 7. *Wenn?, wenn: Warum?*

Video: 8. *Wenn?, wenn: Warum?* (excerpt)

Soprano: Brieann Pasko

Loop Artist: Pam Hulme

Recorded in a service for Good Friday, Pfingstkirche, Berlin, 20.20.2019

### ***Es ist gewisslich an der Zeit***

Audio: 9. *I "Ich bin!"*  
10. *II "Bist du?"*  
11. *III "Wer bin ich?"*

Organ and live looping: Pam Hulme

Track 9 recorded in concert at St. Thomas', Heptonstall, 26.06.2019

Tracks 10 & 11 recorded in concert at Zionskirche, Berlin, 25.08.2019

Video: 12. *III "Wer bin ich?"* (excerpt – extended techniques)

Organ: Pam Hulme

Video evidence recorded at Golgothakirche, Berlin, 20.20.2019

### ***The Tyger***

Audio: 13. *The Tyger*

Video: 14. *The Tyger*

Soprano: Brieann Pasko; Loop Artist: Pam Hulme

Recorded in session at Pfingstkirche, Berlin, 28.09.2019

### ***Bach Remix – BWV 542***

Audio:       **15.** *Bach Remix – BWV 542*

Organ and live looping: Pam Hulme  
Recorded in concert at Pfingstkirche, Berlin, 22.05.2019

Video:       **16.** *Bach Remix – BWV 542*

Organ Pam Hulme  
Beatboxing: Okami  
Video edited from rehearsal footage at Pfingstkirche, Berlin, 01.07.2018

### ***neural (dis)tortion***

Audio:       **17.** *neural (dis)tortion*

Clarinet: Richard Haynes  
Recorded in concert at St. Paul's Hall, Huddersfield, 23.01.2019

### ***I lift my eyes and see shadows on the hills***

Audio:       **18.** *I lift my eyes and see shadows on the hills*

Organ: Pam Hulme  
Recorded in concert at Sophienkirche, Berlin, 15.12.2019

### ***S\_a\_\_/\_y/\_\_ (I)***

Audio:       **19.** *S\_a\_\_/\_y/\_\_ (I)*

Violin: Sarah Saviet  
Recorded in concert at St. Paul's Hall, Huddersfield, 04.03.2019

### ***S\_a\_\_/\_y/\_\_ (II)***

Audio:       **20.** *S\_a\_\_/\_y/\_\_ (II)*

Video:       **21.** *S\_a\_\_/\_y/\_\_ (II)*

Organ and live electronics: Pam Hulme  
Audio recorded in concert at Epiphaniienkirche, Berlin, 10.06.2019  
Supporting video evidence filmed in the organ gallery with incomplete sound

Audio       **22.** **Improvisation on the Utopa Baroque Hyperorgan**

Organ: Pam Hulme  
Recorded at Het Orgelpark, Amsterdam, 16.08.2019

## **Supporting Essays and other documentation**

1. Extending the pipe organ with electronics: towards a symbiotic relationship between the analogue and the digital (c. 5000)
2. Notes on a transferable approach to organ and live electronics (c. 3000)
3. Live looping – a compositional approach (c. 6500)



# Extending the Pipe Organ with Electronics

## Towards a symbiotic relationship between the analogue and the digital

Pam Hulme MA by Research Composition Portfolio, supporting essay

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## Introduction

“The essential nature of the organ, as a synthesizer layering sound upon sound, is controlled by an alchemy very similar to that which generates electronic music.” (Bonaventure, 2019)

Electronic music has a deep connection to the pipe organ, built on similar organising principles and borrowing much of its terminology. Combining organ with electronics in the form of fixed media, or live electronics performed by a second performer, has been part of the field since the late twentieth century. Recent technological developments are beginning to make complete and effective synthesis of the two spheres an exciting possibility through digital augmentation of the organ in real-time. My own practice as a composer and performer centres around solo digital augmentation of the pipe organ, and my research seeks to widen the reach of this artform through establishing an approach which is transferable between different contexts, including instruments, venues, equipment, and performance in liturgy as well as concerts.

In this essay I will outline challenges inherent to working with organ and electronics, and discuss new opportunities, focussing particularly on timbre, spatiality, and transferability. After describing the background to my own practice, I will explore ways in which composers and performers have responded to these challenges and opportunities, both technically and aesthetically, and then summarize my research outcomes and findings.

## Background

Each organ has a specific set of timbres, a specific ‘action’ (technical linkage between keys and pipes) and hence a specific touch, as well as a specific winding system and voicing. In short: each organ presents the organist with a very particular set of possibilities. (Fidom, 2013, p. 14)

Playing the organ requires a constant heuristic calculation of how sound, space and time interact with each other. Each performance situation is unique not only because organs are highly individual but also because in combination with the space in which they find themselves, parameters affecting their sound are constantly variable. Therefore organ

playing - and, even more, playing organ with electronics - requires a deep understanding of timbre, spatiality, and transferability.

Historically, timbre has driven innovation in organ building and performance practice, from the invention of new pipes to extended techniques such as partially drawn stops and variation of wind intensity. Timbre as musical material became more present in composition for organ during the latter part of the twentieth century, for example in György Ligeti's pivotal *Volumina* (1961-2), "where melody and harmony are completely abandoned in favour of sound exploration." (Jullander, 2012, p. 231)

Spatiality is arguably inherent to organ playing, built in as a possibility to historic, as well as contemporary organs. Examples include the *Rückpositiv*, a subset of pipes placed at the organist's back and speaking directly down from a gallery into the listeners' space, and the *Hauptwerk – Hinterwerk – Oberwerk* configuration common in Baroque mid-German instruments, later also including the *Fernwerk*. Spatial displacement effects where, for example, solo and accompaniment speak from audibly different parts of the instrument appear in organ repertoire throughout history, including in Sweelinck's *Echo Fantasias* (early 17<sup>th</sup> century) and the overlapping antiphony in Mendelssohn's Sonata 1 in F Minor (1845). Spatialization is an important expressive tool for organists in response to the acousmatic nature of their instrument, countering the effect of the sound source not being visible to the audience. What the organist hears when performing at the console is always different to what is heard by the listener positioned in the space and this varies according to acoustic phenomena, such as the time delay caused by the distance between different locations. Organists therefore become accustomed to following an imagined aural experience from the listener's position, rather than the sound they actually hear. A common example would be playing a hymn in a resonant acoustic a few microseconds ahead of congregational singing, as heard at the console, so that organ and voices appear to sound together in the main body of the church.

Transferability is central to classical organ performance as repertoire must be reinterpreted for each new situation. Organists must find workarounds when registration choices in the score are not possible on a particular instrument, and adapt their touch to react in real-time

to how the sound reverberates around the space. Historically informed performance practice has become increasingly important in organ culture, with more opportunities to play historic instruments and an expectation that these experiences inform playing of repertoire, supporting knowledge around different organ types and transferability between them. Moreover, factors beyond the organist's control significantly alter how sound behaves in the space; the temperature, the audience, the sound-dampening effect of coats in winter.

When playing the organ, I am inspired by what I perceive as the possibility of manipulating musical "surface" (Feldman, 1988, p. 1), the "something in between" (Jensen, 1996, p. 15) of sonic interaction between space and time. This is a highly subjective way of describing what are, essentially, acoustic phenomena but shifting aural focus recurs as a theme in music for organ and organ with electronics, suggesting that mine is not a unique response. *Entoptic Landscape Version 3* by Lauren Redhead (2014a) for organ and fixed-media electronics and "...rain of stars" for organ and live electronics by Alistair Zaldua (2014), both explore a shifting focus, with changing timbres scattered through malleable time, using spatialization to highly expressive effect.

My own experience of playing the organ, and various discussions with colleagues, suggests that organists learn to understand the inherent *sound-space-time* calculation intuitively. With relatively limited potential to shape dynamics,<sup>1</sup> we organists perform expressively by shaping the sound with duration, rather than amplitude, carving into the edges of notes to give an illusion of dynamic shading: *sound* carved into *space* using *time*.

Origins of my research

Sadly, the organ often has a reputation for being inaccessible and archaic, summed up by composer Soosan Lolavar in her response to working with organ for the first time:

It is not just the complexity of the instrument that I felt alienated from but the whole culture in which it exists; populated by old men in tweed suits and a soundworld steeped in the history and patriarchy of the church. (Lolavar, 2014b)

Organs are unusual in that they are rarely owned by the performer, so gaining access to these expensive instruments requires building relationships with the organisations that house

them. Despite initiatives to widen access,<sup>2</sup> the organ continues to be associated with social privilege, a concept explored by Tomomi Adachi in his piece for organ, toy keyboard and computer: *Where Does the Gap Between the Poor and Rich Come From?* (Adachi, 2015). The organ has, however, been part of a recent live music renaissance, where events crossing stylistic boundaries are marketed as ‘experiences’ offering a ‘liveness’ which cannot be replicated at home; organ-centric examples include *Pipes and Mics* at the Royal Festival Hall (London, 2014) and the *Organ Reframed* festival at the Union Chapel (2016-2018).

I started to explore the organ differently in 2012 through a collaborative composition project with young musicians in East London, ‘*Metamorphosis: Urban-Organ*’. The participants, aged 13-16, had used computer software to write songs in an urban genre (Hip-Hop, R’n’B, Grime) and we reimagined these into a live, acoustic performance centred around the organ. With its potential for bass, chords, and melody to be played simultaneously yet with different sounds, the organ worked well as an ‘acoustic sequencer’, with impressively deep bass, and we added beatboxing as a sympathetic approach to rhythm. Inspired by elements of electronic music (experimental, urban, and dance), I began to explore meeting points between classical organ repertoire and contemporary music, finding, for example, similarities in performance practice between Baroque and Hip-Hop. I became fascinated by how sampling, looping, and live electronic manipulation of the organ expanded my improvisational approach, and was encouraged to explore this in a liturgical context despite early experiments being quite unstable in performance. For me, bringing these two worlds together seemed a logical next step; combining the beauty of acoustic organ sounds with the creative potential of their electronic manipulation.

## Organ and electronics

[O]rgan and electronics work so well together because of the way that organs are built: they are installed in the space. The same is true of electronics, meaning it is possible to get a highly blended sound from the two, and have them sound with one voice. In many ways, the organ is the perfect instrument to team with electronics because it already works on a system of extending the sound (using stops), its sound is diffuse, and its mechanistic method of sound production offers parallels with the creation of digital sound. (Redhead, 2014b)

Music for organ and electronics is often concerned with spatiality, as creative decisions must be made that influence how the electronic and acoustic sounds interact with each other in the space. For example, organist and composer Jakob Lekkerkerker describes his work for organ with electronics as “(exploring)...the relationships between monumental architecture, the spatial sonority of organs and PA-systems, and musical behaviour.” (Lekkerkerker, 2019) Focussing on spatio-temporal and timbral issues, in this section I will explore how composers and performers have addressed transferability across music for organ with fixed-media, organ with live electronics, and organ with digital augmentation.

Spatialization as an aesthetic tool depends on the positioning of sound sources and how they speak into the space. When combining organ with electronics, the possibilities extend from the layout of the pipes and the “blending effect of the acoustic space surrounding the instrument” (D’Alessandro & Noisternig, 2019, p. 41) to include the aesthetic implications of microphone and speaker placement. Spatialization as musical material is explored by Karlheinz Stockhausen in his piece *Himmelfahrt* for organ, soprano, tenor and sound projectionist. (2004/2005) The organ and other acoustic forces are separately amplified and then balanced live by the sound projectionist, “seated in the middle of the hall at a mixing console” . To record the organ, Stockhausen specifies “4 microphones on high stands... placed in front of the organ pipes”, leaving an imprint of the acoustic’s natural resonance on the sound, and “the audience hears these sounds over at least 2 x 2 loudspeakers at the left and right in front of (them)” (Stockhausen, 2004/2005, Performance Directions). In preparing

*Himmelfahrt* for its première in Milan Cathedral, Stockhausen describes some unexpected spatio-temporal challenges which emerged due to the architectural layout:

Already imagining a world premiere in the great cathedral I could hear the sound of an organ... I thought that the organ and the two singers would be way up in the choir... I found out that the manuals of the organ were behind the altar, and that therefore the two singers would also have to stand there in order to be synchronous with the organist. (Stockhausen, 2004/2005)

Practical responses to spatio-temporal challenges of extending organs with electronics can include the organist performing to a click-track, and/or a stopwatch synchronized to the fixed media soundtrack or to the live output of an electronic musician. In performance the organist might use headphones to listen to the fixed media or live electronics so that they hear it unaffected by the acoustic's delay, but this limits the clarity with which the organist can hear themselves playing live. Alternatively, the organist might not listen on headphones while they are following a stopwatch, but instead rely on a sound engineer to balance the sound from the listener's position. In conversation, organist, composer, and improviser Dominik Susteck described his experience of following a stopwatch when performing organ with fixed media as liberating, because the possibilities of responding to the acoustic space were reduced and he could therefore focus more on the ensemble between himself and the fixed media. (Susteck, 2019)

Music for organ with live electronics is often a collaborative performance practice, with organists working as collectives or in creative partnerships, such as Lauren Redhead with Alistair Zaldua, Jakob Lekkerkerker with Alfredo Genovesi, or the well-established collectives *Automatronic* (UK), *Muizmanz* (NL), and *Earth World Collaborative* (CAN). Although fully solo performance of organ with live electronics is possible, it is challenging to execute effectively, with the ORA project in Paris considering "playing in duet... a source of musical enrichment because the computer musician can develop his/her own kind of virtuosity in manipulation of effect controllers." (D'Alessandro & Noisternig, 2019, p. 47)

In order to perform solo digital augmentation of the organ whereby “the organ sound is captured, transformed and then played back in real time” (D’Alessandro & Noisternig, 2019, p. 41), technical complexity must be restricted. Simplified resources, however, make transferability between different contexts easier, and my own experience is that perceived complexity plays a role in parishes’ willingness to host me as a performer. However, effective solo performance of organ and live electronics requires complexity in preparation and rehearsal, so that the technical parameters can be explored and fixed ahead of the performance, according to the sound at the listener’s position. In my own practice this typically involves setting up an approximation of how the live electronics will sound and asking an assistant to play them together with the organ so that I can experience sitting in the listener’s position, which will then inform my registration choices and help me get a feel for the sound balance between different sound sources.

Certain sonic parameters which have a large influence on effectiveness of performance when working with organ and electronics are entirely unpredictable. Variable intonation caused by temperature-related expansion and contraction of pipes, for example, can be both challenging and fascinating, with timbral effects such as undulation and acoustic beating emerging unexpectedly due to a change in the weather. Practical responses to these challenges can be found in composer and organist Huw Morgan’s approach to his piece *The Unseeing Red Eye at the Lung’s Heart* (Morgan, 2013), and in Soosan Lolavar’s *Truisms (enjoy yourself because you can’t change anything anyway)* (Lolavar, 2014a). In exploring “...the reversal of absolute and mutable pitch relationships between the organ and fixed electronics parts”, Morgan addresses transferability between contexts by recording the necessary organ samples on the instrument on which it is to be performed, so that they may be “... detuned and manipulated, yet remain closely matched to the live sound of the organ, creating a dialogue, uncertainty and ambiguity between live and recorded pitches.” (Redhead, 2015, liner notes) In *Truisms...* Lolavar, having “(distilled) the complex range of sounds produced by the organ to their very essence: a collection of sine waves” (Lolavar, 2014b), explores the psychoacoustic phenomenon of acoustic beating through combining mutating, drone-like organ sounds with electronics. Lolavar has addressed the challenge of variable intonation by incorporating a Max/MSP patch which, in response to pitch analysis of the organ, alters the electronics by a specific frequency. This ensures that the acoustic beating phenomenon



central to her piece remains effective despite fluctuation in the organ's intonation, also enabling transferability to other contexts:

The piece unfolds slowly and meditatively, exposing minute changes in timbre and patterns of acoustic beating. This gradual process has the effect of playing with the notion of time, reconstructing it as a malleable substance that expands and contracts according to the objects contained within it. (Lolavar, 2014b)

In the project *Twelve Sketches for Organ and Electronics*, Jakob Lekkerkerker creates twelve pieces which explore historic organs across the twelve provinces of The Netherlands (Lekkerkerker, 2018). Lekkerkerker worked collaboratively with electronic musician Alfredo Genovesi, using two lavalier microphones suspended inside the organs and manipulating the sound electronically using sound processors such as a Moog Ring Modulator and Boomerang Phrase Sampler, before diffusing the sound back into the space. Working as a duo with just two tiny microphones could be labelled as a small scale project, but the analytical metrics here could be interpreted in a different way. The transferability built into Lekkerkerker's portable and replicable approach could be seen as facilitating a large-scale project whose reach includes every one of The Netherlands' provinces and far beyond through the creation of a CD. (Lekkerkerker, 2018)

In contrast, the ORA project in Paris, led by organist Christophe D'Alessandro and Markus Noisternig, researches digital augmentation of organs on an apparently large scale (D'Alessandro & Noisternig, 2019). For example, in a 2008 performance at *Sainte Élisabeth* in Paris eleven DPA omnidirectional microphones were placed across the four separate divisions of the relatively large organ, with two performers supported by a team of sound engineers, and the façade animated by visual projection. The organ sound is captured "inside the organ case, close to the pipes" before being electronically manipulated by bespoke software using RealData as a visual programming language, and using a Max patch to build delay into the signal, so that "transformed sounds interact with the original sounds of the pipe organ," through co-located sound diffusion (D'Alessandro & Noisternig, 2019, p. 41). Research of this kind is vital to organ and electronics as an artform, as it pushes the boundaries of possibility through developing and exploring new approaches and technology. However, viewed from

an alternative perspective, ORA is quite a small-scale project because the complexity of its approach limits the potential for transferability between different contexts.

Autonomous, simultaneous control of organ and live electronics has become increasingly part of the field, and forms the majority of my practice. However, further research is needed in this area to enable greater complexity in performance, particularly around navigating the spatio-temporal issues challenges outlined above. Experimentation in solo digital augmentation by organist-composers includes Hampus Lindwall developing an app to pitch-bend the organ in real time (2016), and Franz Danksagmüller's various innovative projects combining organ with live electronics. Danksagmüller specifically explores autonomous digital augmentation of the organ in *Broken Bach – future music* (2018) using microphones placed inside the organ and KYMA software to manipulate the sounds, with a bespoke interface as well as analogue synthesizers: "The *Broken Bach* project... begins with the compositions of J.S. Bach and several of his contemporaries, and reworks them using the techniques and means we have at our disposal today: sampling, remixing, digital sound manipulation and more." (Danksagmueller, 2018) In video documentation of this project Danksagmüller talks about the importance of integrating the pipe organ more into the soundscape of the contemporary world, recognising the importance that electronic music has in our everyday culture and society. (Danksagmueller, 2018)

### Research Outcomes & Findings

The main outcomes of my research are compositions and improvisations that explore perception as musical material. My approach has typically followed a creative process of experimentation, improvisation, composition, notation, performance, evaluation, re-composition, re-performance, and recording. A large proportion of this work involves organ with electronics, focussing on the intersection between sound, space, and time. In this section I will summarize findings from the practice research around creating and performing these compositions, focussing particularly on practical solutions for spatio-temporal challenges and transferability between different contexts.

As background to the scale of my project, experimentation and performances have taken place across eight different churches. Working in these shared community spaces, building positive inter-personal relationships has been essential not only for facilitating access to organs, but also in cultivating interest in my work, performance opportunities, and receiving informal feedback. In my experience, parishes are often keen to explore the organ in a new way, both through concerts and as a tool for reinterpreting the liturgy. From one perspective, my approach might seem relatively small-scale, because I ensure that portability is central to my practice and therefore limit the scope of my technical setup. However, this in-built transferability has enabled me to perform in thirty concerts or services across the eight different contexts during this two-year part-time MA by Research, representing quite a large-scale project in terms of audience reach. Analysis of each performance context can be found in the text, *A transferable approach to organ and live electronics*. This includes information about the organs, the architecture, the acoustics, and a detailed summary of the transferable approach to working with organ and live electronics which I developed through this practice research. Here, however, I will briefly discuss the practical and technical findings which support effective performance of my compositions, following a structure of in / thru / out:

in – microphone choices and microphone placement

thru – electronic manipulation of sounds

out – speaker choices and speaker placement

in:

Decisions about microphones and their placement have a huge impact on the aesthetics of music for organ and live electronics. Possibilities are almost always limited by challenges such as amount of space around the console, layout and access to the pipes, audibility of wind, motor, and other non-intentional noise, and resonance and architectural layout of the space. I have found that a heuristic approach is most effective, remaining open to adaptation when theory doesn't quite work in practice. My research has included experimentation with the following microphones and recording techniques:

A/B stereo pair of condenser microphones (AKG C414s, cardioid) placed at equal height to the pipes (mid-point), at a range of distances from the organ.

X/Y matched unidirectional microphones (Zoom H4n handheld recorder) placed close to the organ, inside the organ, or focussed on a subset of the organ.

Dynamic microphones (SM58 / AKG D5 supercardioid) mainly for supplementary vocals but also organ, placed head height, close to the pipes at the console.

Omnidirectional microphones (DPA 4060) placed close to the organ, inside the organ, and inside specific organ pipes.

Contact microphones (JrF) on specific organ pipes, and the organ case.

Different aesthetic aims can be achieved by varying the approach to microphone choice and placement. Together with sound artist Jo Kennedy, I experimented with placing omnidirectional microphones inside the organ case and inside individual pipes, as well as placing contact mics on specific pipe types and pitches. For an improvisation performance at St. Thomas' Church, Heptonstall, we applied these approaches to the lowest pipe (16' *Bourdon* on a low C), and an Ab *Crumhorn*, selected because Ab was identified as the approximate resonating pitch of the un-played organ when amplified. Overtones were significantly more present when using a contact microphone on the *Crumhorn* (reed pipe), as opposed to the *Bourdon* (flue pipe), inspiring quite a melodic improvisation centred around the harmonic series.

Aesthetically, when performing organ with live looping, it is important to me that the organ sound to be electronically manipulated is imprinted with the character of the acoustic space; i.e. resonance is present as a trace in the sound. This approach supports spatial displacement effects between organ and the electronics, and brings my work closer to giving a sense of manipulating the musical surface. My preference therefore, is to use X/Y matched unidirectional microphones placed close to the organ, outside the case, picking up a balanced impression of how the pipes speak into the space. This is in contrast to the approaches of ORA, Lekkerkerker, and Danksagmüller outlined above, whose internal approach reduces the impact of the acoustic outside the case on the sound, but might lead to imbalance between individual pipes, depending on their proximity to the microphones.

Using the X/Y configuration on a handheld Zoom recorder supports the transferability of my practice in most cases, but occasionally this needs supplementing with internally positioned microphones. If the performance includes spoken/beatboxed material then a secondary dynamic microphone at the console is required, and this can also be used to supplement the organ or record other sounds, as appropriate.

I have established three relatively simple, transferable approaches to microphone placement which provide me with an efficient starting point when navigating new performance contexts for organ with live electronics:

Set-up A: X/Y Zoom in front of the organ & dynamic mic in front of the organ

Set-up B: X/Y Zoom inside the organ & dynamic mic in front of the organ

Set-up C: X/Y Zoom subset of the organ & dynamic mic in front of the organ

**thru:**

Although working with organ and live electronics does present certain challenges and limitations, decisions around how sounds are electronically manipulated largely depend on individual creativity and personal preferences regarding set-up. Facility with a breadth of approaches supports transferability, particularly if combining the organ with live electronics is challenging due to the instrument or acoustic conditions. Throughout my research I have experimented with the following resources:

Hardware	Software	Interface
Boss RC-505 Loop Station	Logic Pro	Korg Nanopad II
Kaoss DJ Controller	Ableton Live	Korg Nanokontrol II
KaossPad digital effects processor	Serato DJ	M-Audio o2 MIDI controller keyboard
		Lemur on iPad
		Ableton Push

The layout of the organ console is a key factor in selecting equipment as space is often very limited. Ergonomically, I prefer to perform with a table-top looper and audio effects processors, rather than with laptop and controllers, as engaging with a laptop feels at odds

with the habitus I have developed as an organist (van Oortmerssen, 2002). My preference is to place equipment in front of me on the music stand which, whether hardware or interfaces connected to a laptop placed on the organ bench, must be fairly light in weight. Touch is also an important consideration for me when selecting an interface between organ and electronics; the organ might be ‘the first synthesizer’ but finger-touch is crucial for expression, particularly on mechanical-action instruments. Interfaces with soft, responsive buttons, such as the Boss RC-505 loop station, help me to stay connected to good organ-playing technique, thereby creating sound of the highest quality for electronic manipulation.

Regarding creative choices around electronic manipulation, although my practice research has often taken a heuristic approach, my research findings around which effect-types are most successful in combination with live organ are broadly in line with the analytical findings of the ORA project. Synchronous modulations or transformations of the sound source (*paradigmatic effects*), such as *filter*, *phaser*, and *distortion* are highly effective with live organ though can be quite unstable and prone to feeding back in resonant acoustics. Other paradigmatic effects such as *slicer* are more sonically stable, but most effective in a live looping context as the separation between live sound and transformed sound is almost imperceptible until the live sound source ceases and the effected sound is played back ‘on loop’.

*Syntagmatic* effects such as *beat repeat*, *delay*, and *arpeggiation* which transform the sound through time are very effective when applied to live organ as they amplify the impression of spatialization, particularly if panning effects are also employed. Generally, using software for electronic manipulation of sound gives wider scope for controlling expressive parameters and can also help to solve sonic problems such as Soosan Lolavar’s use of a Max/MSP patch to regulate tuning in *Truisms...* (2014a), and my reducing certain frequencies using Ableton Live in response to feedback issues. However, the expressive parameters of pre-set effects within the hardware I use can be expanded by adjusting internal parameters or linking to further equipment, including computer software.

**out:**

Decisions about speaker choices and their placement have a huge impact on the aesthetics

of music for organ and live electronics, with possibilities often limited by architectural layout and acoustic resonance. I have established four relatively simple, transferable approaches to speaker placement that provide an efficient starting point for navigating performance of organ with live electronics in different contexts:

Set-up 1. Speakers placed in front of the organ

Set-up 2. Speakers placed in front of the organ plus surround speakers

Set-up 3. Speakers placed behind an architectural shield (e.g. under gallery or behind pillar)

Set-up 4. Speakers placed behind an architectural sonic shield plus surround sound speakers

To summarize, set-ups 1 and 3 are unified sound-source approaches, set-ups 2 and 4 support expressive use of spatialization techniques, and the architectural layout of the space plays a large role in decision-making around speaker placement. While a unified sound-source can be an aesthetic choice, as in the ORA project, there might also be practical reasons for my using set-up 1 or 3, for example in a liturgical context, where separate sound-systems are required for speech and transmission of the electronics, causing a more unpredictable sonic environment. Generally I have found that feedback is more likely to occur when performing with surround sound, particularly in highly resonant acoustics.

Engaging with transferability can mean being open to using the speakers and other equipment which is resident at the performance venue. In a church context this often means a built in surround sound system which, if used in combination with a subwoofer or PA to counterbalance presets programmed to optimize frequencies for speech, supports my preference for situating the listener in a three-dimensional sound-space, employing spatial displacement effects between organ and electronics.

Whilst I have carried out extensive experimentation with organ and live electronics, the majority of my work is for solo digital augmentation of live organ, either as organ with live electronics or organ with live looping. These areas share some spatio-temporal challenges with performing organ with fixed media or organ with live electronics as an ensemble but, as well as finding technical solutions, I try to address these challenges compositionally. In performance, issues with time delay are both unavoidable and highly variable, and I address

these challenges in my practice by approaching time in one of two ways; either listening to a click track on headphones in order that my playing stays 'in time' with a given, electronically generated pulse, or through playing without headphones, intensely listening to the sounds reverberating around the space and carving the sound into the space in response. Playing to 'temporal time' is essential for organ with live looping as an inherently rhythmic genre, so that the organ appears to play absolutely in time with the electronics from the listener's position, whereas playing to 'musical time' tends to result in more ambient soundscapes, such as in my piece *I lift my eyes and see shadows on the hills* which asks the performer to be guided temporally by the sound moving around the space.

## Conclusion

Digital augmentation of the organ is not only an exciting next step in contemporary organ performance practice, but also in the evolution of wider organist culture, including church music. The possibility of autonomous, simultaneous control of organ and live electronics opens up enormous creative potential in relation to timbre and spatialization, and also recasts the organ as a wonderful hyper-version of its former self. This is particularly exciting with regard to the inherent liveness and improvisation in organ performance practice, as well as further exploring the expressive potential of the *sound-space-time* calculation.

In August 2019 I was fortunate to experiment and perform an improvisation on the Utopa hyperorgan at Het Orgelpark in Amsterdam, which uses cutting edge organ-building technology to make timbral and spatialization effects inspired by electronic music possible on an entirely acoustic instrument. Developing a transferable approach to autonomous digital augmentation of the organ, however, makes extending the acoustic organ with electronic manipulation a possibility in a wide-reaching parish context as well as in elite research institutions, potentially transforming organ performance practice as a whole.

Next steps for me will be expanding my approach to electronic manipulation, and exploring more nuanced spatialization, with upcoming performances including *Electric Spring* at the University of Huddersfield using the HISS and at Union Chapel as a fringe event of the Organ Reframed festival.



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<sup>1</sup> On the organ, crescendos and diminuendos are achievable only through terraced registration changes or by using a swell box affecting a subset of pipes.

<sup>2</sup> Outreach projects include: Leeds Cathedral, South Bank Centre, Gothenburg, Het Orgelpark (Amsterdam)

## Notes on a transferable approach to organ and live electronics

Pam Hulme MA by Research Composition Portfolio, supporting text

During the period of my research I experimented with organ and live electronics on eight different instruments, representing a broad range of styles situated in various architectural layouts. Performances took place in a mixture of church services and concerts, always with an audience and the opportunity to receive their informal feedback, and I was fortunate to have good access with significant amounts of time for experimentation and rehearsal. This document gives the context for my practice research into composing, improvising, and performing music for organ and live electronics, giving notes on the findings that have helped me to develop a transferable approach.

When approaching performing with organ and live electronics in a new context there are four main aspects to consider:

- sound possibilities of the instrument
- physical profile of the instrument
- layout of the performance space
- the nature of its acoustic.

The context of my practice as a working church-musician means that it matters how complex the set-up of my approach is. Churches are multi-use community spaces and keeping my set-up as uncomplicated as possible helps me be flexible around venue logistics, gaining maximum access for experimentation and repeated performance opportunities, building ongoing relationships with listeners. I am not able to drive so it is important that the equipment I use to experiment and rehearse is transportable by bicycle, normally adding speakers only in final performance preparations. While there are large-scale research projects into digital augmentation of organs using spectral and other forms of analysis to map the sound, space, and electronics as a starting point for creativity, I have developed a heuristic approach to organ and live-electronics which enables me to work across the range of instruments and contexts I encounter in my practice.

I categorize the timbral style of the organ into: **soft – mixed – hard**

I categorize the layout of the organs into: **chamber – wide/tall prospect – disparate**

I categorize the resonance of the acoustics into: **small – medium – large**

While I have experimented with omnidirectional DPA mics, contact mics, dynamic mics, and condenser mics, my preferred set-up for transferability is a handheld Zoom recorder (XY condenser mics) in combination with a dynamic microphone, enabling me to add vocal and other non-organ sounds in performance. If a situation requires greater complexity then I modify the set-up, sometimes recording the organ with multiple microphones in different positions, but for most of the contexts in which I work the following three approaches to microphone placement and four options for speaker placement are a useful starting point:

Set-Up A: XY front + dynamic front

Set-Up B: XY inside + dynamic front

Set-Up C: XY subset + dynamic front

Key to speaker placement set-ups:

1. Speakers placed in front of the organ
2. Speakers placed in front of the organ plus surround speakers
3. Speakers placed behind an architectural sonic shield (e.g. under gallery or behind pillar)
4. Speakers placed behind an architectural sonic shield plus surround sound speakers

Table A: Summary of the eight organs used during my practice research, including my preferred microphone set-ups plus possible and preferred placement of speakers in each context.

	Acoustic Space			Organ			Mics	Speakers	
	Venue	Resonance	Organ Position	Manual	Type	Timbre style	pref. set-up	poss. set-ups	pref. set-up
Chamber	Auferstehung	small	back/gallery	1	neo-B	hard	A	1	1
	Golgotha	medium	front/ground	1	neo-B	hard	A	3, 4	4
	Pfingst	large	front/ground	2	neo-B	hard	A+	1, 2	2
	Pfingst gallery	large	back/gallery	1	Rom	soft	B	3, 4	4
	Zion	large	side/ground	1	neo-B	hard	B	3	3
Disp.	Heptonstall	medium	middle/gallery	2	contp	mixed	C	3	3
	Epiphanien	large	back/gallery	3	contp	mixed	C	3	3
	Sophien	medium	back/gallery	2	neo-B	mixed	C	1	1

Table B: Analysis of my preferred speaker placements across the eight organs

	Front	Side	Middle	Back
Ground	4 <b>2</b>	<b>3</b>		
Gallery			3	1 <b>4 3</b> 1

Observations regarding microphone placement using the three set-ups I have established:

#### Set-up A

- the most effective approach when working with smaller or chamber-style organs as they tend to have a compact constellation of pipes, enabling the recording of well-balanced, good quality sounds which behave broadly as one would expect from the acoustic organ; e.g. Principals louder / more present, Flutes softer / more subdued.
- recording clear bass frequencies can be challenging, but applying filters either during the recording or playback process can help.
- In some contexts this is the only practicable approach, for example in Pfingst- and Golgothakirche where the inside of the organ case is inaccessible, and modifications such as shielding the microphones and/or space around the organ can help to counterbalance the effects of a highly resonant acoustic.

#### Set-up B:

- particularly successful where there is a large cavity inside the organ
- the most effective approach in a highly resonant acoustic
- simple form of 'micro-phony'
- challenges include the risk of recording an unbalanced sound as the microphones pick up sound from the pipes to which they are closest, but...
- organ-specific knowledge regarding types and location of pipes helps to offset this

#### Set-up C

- involves mic'ing up a subset of the organ.
- Limitations are that sounds are only available from a smaller section of the organ, but it can support a clearer, more stable sound-source.

**Broad observations:**

- Larger organs present a wider range of timbral possibilities but effective microphone placement for live manipulation of the sound is typically more challenging
- Smaller organs present a limited range of timbral possibilities but effective microphone placement for live manipulation of the sound is typically less challenging
- Digital augmentation is a highly effective way of extending the timbral possibilities of smaller organs
- Recording the sound inside the organ case 'micro-phony' gives the most direct, pure sound source for live digital effects processing
- Recording the sound inside the organ case 'micro-phony' can result in an unbalanced result because of the physical layout of the pipes internally.
- It is more likely that recording the sound from in front of the organ case will be more effective in a less resonant acoustic, resulting in a well-balanced sound which includes an imprint of the natural reverberation present.
- Problems with feedback are more likely to occur in a more resonant acoustic, however, placing microphones inside the organ case reduces the likelihood of this.

**Summary:**

Through this research I have developed three set-ups for microphone placement and five set-ups for speaker placement which provide a useful starting point for performing with organ and electronics. There were no conclusive or particularly consistent findings across the broad range of contexts in which my research took place. What emerged instead was a sense of the importance in each case of the interplay between resonance, timbral style of the organ, and architectural layout of the space.

## Context

The majority of the organs I worked with during this research project are located in the geographical area of what was, between 1949 and 1989, East Berlin. Specific historical factors have left this area with an unusually homogenous organ culture. During World War II many organs in churches across Germany were destroyed through bomb damage, and through the requisitioning of metal organ pipes for munitions, as was the case in Pfingstkirche, Berlin-Friedrichshain. The legacy of WWII was compounded in East Germany (GDR) as a result of the suppression of religion by the GDR government, which saw it as a threat to socialist ideology and an incubator for resistance movements. Conflict between the East German Church and the state resulted in chronic underfunding and the forced neglect of church infrastructure and assets, including the organs. However as relations between church and state relaxed from 1971 onwards, parishes across East Berlin were able to replace lost organs with, usually, much smaller instruments which were intended only for interim use. The majority of these tracker action organs are in a neo-Baroque style and were built either by Schucke (Potsdam, nr. Berlin), or Eule (Bautzen, nr. Dresden). Although they are often not of the highest quality, and tend to have hard-edged timbres with a relatively large number of mutation stops, it is often possible to play these organs with extended acoustic effects such as stops half-drawn. A limited number of 19<sup>th</sup> Century, Romantic, pneumatic action W. Sauer organs also survived, of which the largest example (now rebuilt) is the organ of the Berliner Dom (Berlin Cathedral). These organs characteristically have beautiful, softer-sounding pipes but many extended acoustic effects are not possible due to their pneumatic transfer mechanisms. Given this historical context, and that my work as a church musician is centred around the former East districts Friedrichshain and Mitte, it is perhaps unsurprising that the only Berlin organ I have explored during this research not built by Sauer, Schucke, or Eule, is the Dinse organ in Epiphaniienkirche, Charlottenburg, located in former West Berlin.

### The Organs:

Friedhofskapelle der Auferstehungs, Berlin

Golgothakirche, Berlin

Zionskirche, Berlin

St. Thomas', Heptonstall

Pfingstkirche, Berlin (main organ)

Pfingstkirche, Berlin (gallery organ)

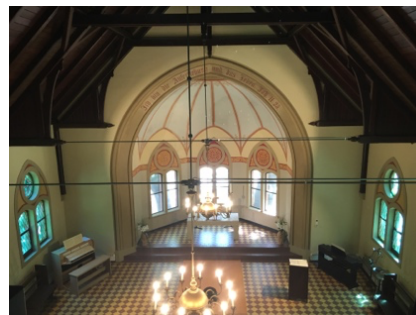
Epiphaniienkirche, Berlin

Sophienkirche, Berlin

## Friedhofskapelle der Auferstehungsgemeinde

Indira-Gandhi-Straße 110, 13088 Berlin

Venue: small cemetery chapel with organ on a inset gallery at the back. Permanent stereo Hi-Fi speakers installed in front of the organ, speaking down into the chapel; no heating means limited access in winter.



Organ: 20<sup>th</sup> Century *Schuke*, neo-Baroque style

Manual I: Flute 8', Principal 4' 2', Mixture

Pedal: no independent stops

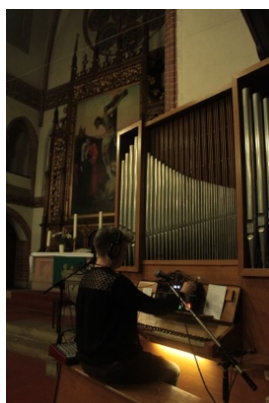
Tracker action; very limited registration choices available; largely hard-edged timbres; quite badly out of tune; not often played; very limited space at the console.

Summary: performing here was very straightforward using microphone set-up A with the balcony as a highly effective sonic shield, and speaker set-up 1 using the in-built system.

## Golgothakirche

Borsigstrasse 5, 10115 Berlin

Venue: city church in built-up area; fairly resonant acoustic. Surround-sound system built-in, but needs sub-woofer ; unavoidable background noise (low hum) from street and heating system; position slightly under the side gallery acts as a sonic shield.



Organ: 20<sup>th</sup> Century *Schucke*, neo-Baroque chamber style

Manual I: Flute 8', Principal 4', Flute 2', Mixture

Pedal: Bourdon 16'

Tracker action; limited registration choices available; largely hard-edged timbres; 2' occasionally out of tune; Mixture very shrill, bass (16') very soft; not possible to place microphones inside the instrument; partially-drawn stop effects are possible.

Summary: apart from background noise, performing here is straightforward, using microphone set-up A and speaker set-up 3 or 4, depending on aesthetic need for more prominent bass frequencies, making use of walls and columns as sonic shields.



## Zionskirche

Zionskirchplatz, 10119 Berlin

Venue: large church within a park (sonically insulating) but next to tramlines; highly resonant acoustic; prominent 360° gallery; no heating so limited access in winter; unavoidable background noise (trams) from outside; position under gallery acts as a sonic shield.



Organ: 20<sup>th</sup> Century *Schucke*, neo-Baroque chamber style

Manual I: Flute 8'2', Principal 4', Mixture; Pedal: Bourdon 16'

Tracker action; very limited registration choices; generally hard-edged timbres; bass (16') is very soft; Mixture is shrill and unusable since vandals ripped out some of the pipes; partially-drawn stop effects are possible; too small for the space, but it is temporary while the church fundraises for a larger instrument.

Summary: Zionskirche is a beautiful venue with a reputation for contemporary music so giving a concert here was a special although the performance itself was challenging because of the small, damaged organ and highly resonant acoustic. I used microphone set-up B with XY condensers placed inside the organ case, but as distant as possible from the motor, and speaker set-up 3, making use of the pillars and gallery as sonic shields.

## St. Thomas' Church

Heptonstall, Hebden Bridge, Yorkshire

Venue: village church set within churchyard; fairly resonant acoustic; 4 Hi-Fi speakers positioned around the space; intermittent heating results in significant pitch deviation between rehearsal and performance; background noise (nature sounds); gallery gives good sonic shielding options.



Organ: 20<sup>th</sup> Century, Hill, Norman & Beard (1964)

Manual I: Principal 8' 4' 2', Flute 8' 4', Krumhorn 8'

Manual II: Flute 8' 4' 2', Salicional 8', Mixture

Pedal: Bourdon 16', Principal 8', Flute 4'

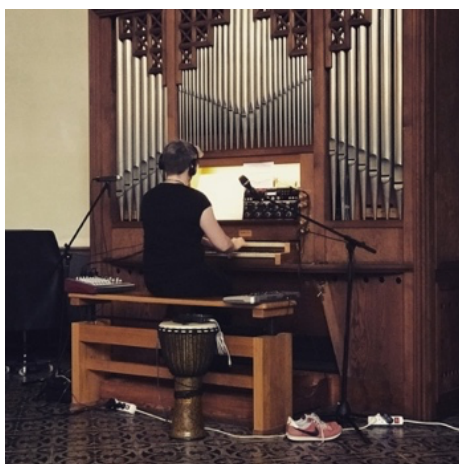
Electronic action; limited registration choices available; the unusual layout of the pipes presents some challenges; fans in the ceiling make quite a loud noise and wildlife sounds can also be quite intrusive.

Summary: The possibility to record the swell in isolation is helpful, with the principals then speaking down clearly into the body of the church. The registers borrow pipes from each other across the instrument, however, which results in quite a limited choices of timbres and an weak sound overall.

## Pfingstkirche

Petersburger Platz 5, 10249 Berlin

Venue: large city church in built-up area with tramline outside; very resonant acoustic. Surround-sound system built-in, with 8 speakers on ground floor and 4 on the gallery, but needs sub-woofer; unavoidable background noise (traffic and tram-screeching) from street; no heating means limited access in winter; two different organs in the same space.



Main organ: 20<sup>th</sup> century *Eule*, neo-Baroque chamber style

Manual I: Flute 8', Principal 4', Flute 2', Mixture

Manual II: Quintadena 8', Flute 8' 2', Sesquialtera, Tierce

Pedal: Bourdon 16', Flute 8'

Tracker action; fairly small, but nice range of stops;

interesting effects possible with Quintadena and

mutations; generally hard-edged timbres; very resonant

acoustic means feedback is often a problem; not possible

to place microphones inside the instrument; partially-

drawn stop effects are possible.

Gallery organ: 19<sup>th</sup> century *Sauer*, Romantic chamber style, 1 manual split into 2 halves

Manual I (upper octaves): Flute 8' 8' 4', Principal 2', Mixture

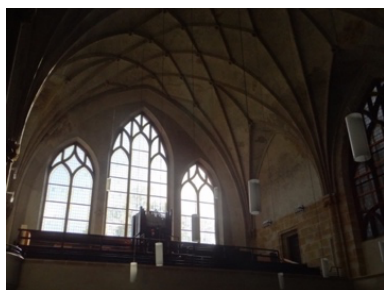
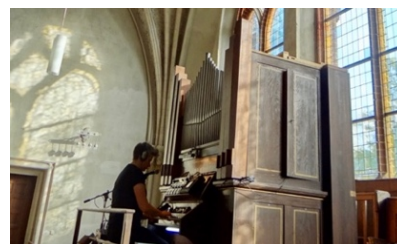
Manual II (lower octaves): Flute 8' 4', Principal 2', Mixture

Pedal: Bourdon 16'

Pneumatic action; beautiful instrument; soft timbres (over-

legato style), in combination with the very resonant acoustic, can cause feedback problems; dividing

manual presents interesting possibilities; partially-drawn stop effects not possible; bass is very soft .



Summary: this is where I practice most often so have a deep relationship to the instruments and the qualities of the acoustic. I find the resonance in Pfingstkirche inspiring but challenging when combining the organs with live-electronics. Because the timbres of the two organs are extremely different, each one requires a separate approach, which influences performance programming.

For the main organ I use microphone set-up A and speaker set-up 1 or 2, and the microphone set-up B and speaker set-up 4 with the gallery organ, plus critical use of sonic shielding. It is particularly exciting to work with spatialization here and this is the venue in which I have most thoroughly explored analysing and filtering out specific frequencies.

## Epiphanienkirche

Knobelsdorffstraße 72, 14059 Berlin

Venue: city church next to a six-lane road; severe background noise from outside (low hum); very resonant acoustic; no accessible sound system built-in; my preparation and performance took place in June with temperatures higher than 30°, causing significant deviation in tuning and also the metal roof to creak loudly as it expanded and contracted in the heat; gallery makes sonic shielding possible.

Organ: 20<sup>th</sup> Century, *Voigt*, designed for contemporary music with neo-Baroque influences; tracker action; large instrument with disparate pipes (separate pedal towers left / right, plus very tall Oberwerk); wide range of registration choices; timbre is hard-edged overall, but with a range of softer options; not possible to place microphones inside the instrument but Brustwerk provides a semi-isolated sound source; partially-drawn stop effects are not possible.



Manual I (Hauptwerk):	Manual II (Oberwerk):	Manual III (Brustwerk):	Pedal:
Pommer 16'	Rohrgedacht 8'	Gedacht 8'	Principal 16'
Principal 8'	Principal 4'	Rohrflöte 8'	Oktave 8'
Oktave 4'	Octave 2'	Principal 8'	Rauschpfeiffe I 16/3'
Oktave 2'	Scharf I (3fach) 1'	Mixture 3-4 fach	Rauschpfeiffe II 4'
Mixtur I (2fach) 2'	Scharf II (2fach) 2 2/3	Rauschpfeiffe Quinte	Rauschpfeiffe III
Mixtur II (4-5fach) 2/3'	Scharf III (2-3fach) 4'	Rauschpfeiffe Schwiegel	Quinte 8/3'
Mixtur III (1-5fach) 2'	Holzflöte 8'	Terz 6/5'	Rauschpfeiffe IV 2'
Quinte 8/3'	Koppelflöte 4'	Nazat 8/5'	Rauschpfeiffe V
Terz 8/5'	Nazat	Allzweck	Quinte 4/3'
Septima 8/7'	Flageolet 8'	Rankett 16'	Rauschpfeiffe VI 1'
Gedackt 8'	Cymbel 1-4fach	Dreikugelregal 8'	Subbass 16'
Waldflöte	Dulcian 16'	Trechterregal 8'	Gemshorn 8'
Kubische flöte 8'	Krumhorn 8'	Tremulant	Hohlflöte 4'
Harmonische Schw. 8'	Tremulant		Spitzflöte 2'
Trompete 8'			Posaune 16'
Tremulant			Posaune 8'
			Clarine 4'

Summary: This was by far the largest organ I worked with during my research, both in size and number of stops. Working with this instrument was challenging, especially in such a resonant acoustic, but the choice of timbres available was rewarding. I feel that I didn't quite get the balance of organ and playback right in this context, particularly with the 16' Posaune which I was keen to use as it had almost a dubstep '*wahp*' quality. It was however possible to take quite clear sound from the *Brustwerk*, supported by placing speakers underneath, using the gallery as a sonic shield.

## Sophienkirche

Grosse Hamburger Strasse 10115 Berlin

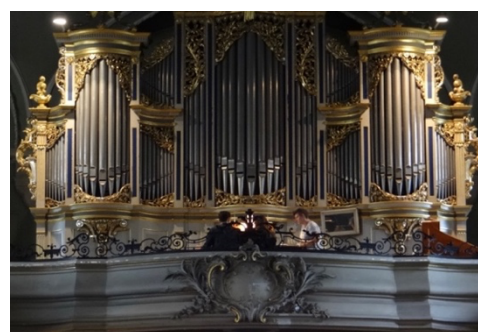
Venue: Baroque city church, surrounded by a large park; fairly resonant, beautiful acoustic. Surround-sound system built-in, with 8 speakers on ground floor and 4 on the gallery, but needs sub-woofer.

Organ: 20<sup>th</sup> century *Schucke*, neo-Baroque style

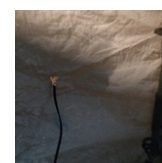
Varied timbres including reeds, strings, and a range of mixtures; tracker action; partially-drawn stop effects are not possible as stop selection works by electronic action; large cavity inside the organ, with good access, but for the months around my performance the pipes were wrapped in a tarpaulin due to church restoration work; gallery around three sides gives many options for sonic shielding.



Manual I:	Manual II:	Pedal:
Quintadena 16'	Principal 8'	Principal 16'
Principal 8'	Rohrflöte 8'	Bourdon 16',
Flute 8'	Principal 4'	Principal 8'
Principal 4'	Flute 4'	Flute 8'
Flute 4'	Principal 2'	Principal 4'
Principal 2'	Flute 2'	Posaune 16'
Flute 2',	Flute 1'	Posaune 8'
Nazard	Sesquialtera	
Mixture I	Tierce	
Mixture II	Krumhorn 8'	
Trompete	Salicional 8'	



Summary: the range of sounds available and the beautiful acoustic made performing here very rewarding. I work here regularly so am comfortable with the instrument and the acoustic. With the wide prospect I had expected microphone set-up B to work best, using micro-phony inside the organ case but, due to the restoration work, access to the pipes was awkward and therefore I used microphone set-up A with cables passing through a small hole I made in the tarpaulin. The restoration also caused further logistical issues with speaker set-up so I used speaker set-up 1, although spatialization effects achieved through a different set-up would be interesting to explore here under normal circumstances.



## Live looping – a compositional approach

Pam Hulme MA by Research Composition Portfolio, supporting essay

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### Introduction:

“Live looping is the technique that allows a musician to record a snippet of what they are playing to form a repetitive loop, or “phrase” in real-time”. (Roland, 2016)

Live looping has grown as a performance practice alongside developments in music technology from early experiments with tape-looping in the mid 20<sup>th</sup> century to the broad range of live looping possibilities with dedicated hardware and software available today. Repetition is a central characteristic to live looping, just as it has been to musical practices throughout history. With their melodic variation over a perpetually repeating bassline or harmonic progression, the chaconne and passacaglia from the Baroque period could be seen as pre-cursors to live looping, for example. Technological developments have not only expanded the creative potential of repetition but also shifted cultural norms (Benjamin,



1936). In music, through the twentieth century there was an exponential change in this regard and the Western cultural mainstream is now permeated by “music...wholly or predominantly characterised by the emission of a succession of repetitive beats” (Criminal Justice and Public Order Act, 1994). Though highly repetitive, twentieth century musical Minimalism focussed on processes of minimal, gradual change and was often composed for acoustic forces. Live looping, however, depends on technology to facilitate the repetition of musical material, following on from practices which emerged in experimental, dance and hip-hop music of the later twentieth century. Live looping is the cyclical layering of short motives, either in exact reiteration or altered through cutting and splicing, largely achieving musical development through variation by electronic manipulation.

### **Background: precision – nexus – liveness – perception**

Live looping has been adopted as a performance practice in many different genres. Notable examples include the mainstream pop music of Ed Sheeran, competitive beatboxing battles, and the more experimental, folk and jazz influenced music of Kerry Andrew and Randolph Matthews. Across different genres, however, there seems to be a commonality of approach in live looping practice which I have categorized into four elements: focus on producing high quality sound to be looped; creation of a pre-determined loop nexus which scaffolds the music; improvisation within specific parameters compatible with a loop nexus; the use of perception as musical material. As a supporting text to the compositions and improvisations submitted in my MA by Research portfolio, this essay will explore these four elements both generally and in my own practice, outlining a compositional approach to live looping.

#### **Precision**

Live looping artists often seem fascinated by pursuing excellence through precision in musical performance. This is perhaps not surprising, given the unforgiving nature of hearing oneself ‘on loop’ which, over time, draws attention to any imperfections that would perhaps have escaped the listener’s attention in a fully acoustic performance. Through collaborating with London-based artist Okami in 2018 I became familiar with how obsessively beatboxers engage with the physical production of their sounds, and how inventing unique sounds is part of an individual artist’s profile in this field. (AKA Okami; Andrews, 2019) This striving for precision

in the producing of musical sound has deep similarities with classical musical training, for example with the obsession around facility of touch in organ performance I explore in my own practice. Additionally, live looping requires sufficient fluency with technology so that, despite the complexity of integrating analogue and digital sound in real time, and under performance pressure, spontaneous creative decisions can be made.

## Nexus

In live looping practice there is typically a predetermined scaffold on which the music hangs. I refer to this matrix of short motives, knitted together by the loop artist in performance, as the 'loop nexus'. At a fundamental level of rhythm and pitch there needs to be compatibility across this loop nexus for the musical material to make sense, either as foreground musical interest, a looping accompaniment in the background, or somewhere in between. Effective live looping performance uses the loop nexus as a starting point for further musical invention, often treating motives redactively in a similar way to the practice of mixing two tracks together through isolating particular motives or fragments thereof in DJ culture: sampling.

Many examples of live looping practice use the building up of a loop nexus as part of their aesthetic, structuring performance by visibly laying down loops as well as audibly. Ed Sheeran is an accomplished example of this approach, but often also records loops surreptitiously so that the rate of performative change remains relatively fast, resulting in a slick and enjoyable experience for the audience rather than a repetitive exercise in live looping technique (Sheeran, 2017). Other strategies for structuring live looping in performance include taking a narrative approach, such as Randolph Matthews' use of dramatic storytelling, and engaging the audience through an on-stage persona such as the energetic presentations of Beardyman and Jacob Collier. In the case of Beardyman (AKA Darren Foreman), a chaotic on-stage persona masks, to an extent, the precision required to achieve his self-stated goal of, "being able to make dance music live." (Foreman, 2012). Having come through the beatboxing tradition, Beardyman now seems concerned with harnessing spontaneity in complex live looping performance, often performing whole concerts of solo, largely vocal, live looping using the *Beardyton 2000 Mk II*, the bespoke live looping set-up which he created in collaboration with researchers and software developers (Foreman, 2012).

## Liveness

Common across these examples of contemporary live looping performance practice, as well as in my own work, is that giving an impression of liveness is central to the performance aesthetic; an approach echoed in relation to other art-forms in Walter Benjamin's *The Work of Art in the Age of Mechanical Reproduction*: "The presence of the original is the prerequisite to the concept of authenticity." (Benjamin, 1936, p. 50) Live looping performance is often the presentation of an apparently spontaneous musical activity, behind which is a hidden complexity that requires pre-determination, in other words: composition.

## Perception

In facilitating this spontaneous creation of a solo performance beyond the parameters of human possibility, live looping inherently plays with perception. Through my research I have explored this chimera and suggest a compositional approach which supports the use of perception as musical material in live looping practice as demonstrated in this essay, as well as compositions and improvisations. 'Musical imagery', the phenomenon of hearing music in the mind rather than in the ear (Sacks, 2007), is the most significant perceptual aspect of live looping practice and can, I suggest, be compositionally cultivated in the listener. Other examples of music which also rely on this phenomenon include acoustic beatboxing, where the establishing of repetitive beat patterns which are heard at first in the ear and subsequently in a redacted form in the mind of the listener, enable the performer to sustain musical development and successfully navigate the hard boundaries of human possibility; managing the balance of in and out breaths. In live looping, the boundaries are different because technology can facilitate the perpetual reiteration of loops. The challenge is rather not to overcrowd the sonic space with too much simultaneously so that the listener continues to perceptually navigate a journey through the music.

## My approach to live looping: why? – what? – how?

I am aesthetically drawn to repetition, both in music and in the visual arts, and tend to perceive similarity rather than difference in art-forms which fascinate me, for example the mathematical inner workings of an organ fugue, a Bridget Riley painting, and a carefully choreographed 'drop' in electronic dance music. Although I use live looping in a range of contexts, one of the most rewarding aspects for me of this practice is pushing the



performance boundaries of my principal instrument, the pipe organ. Bringing aspects of organ, electronic dance music and hip hop cultures together seems to resonate with listeners, particularly when performed live in a church music context. Audience members are often keen to give feedback after services and concerts, and these discussions have explored themes such as how this music reflects the sound of the city, and how combining the analogue and the digital is a contemporary metaphor for bringing the Ancient and Modern together.

## Why?

I first became familiar with live looping while working as Head of Music in an East London school (2005-2013), through supporting students with singing, rapping, beatboxing and electronic music creation. Hip-hop, Grime, RnB, and electronic dance music influenced much of this music-making and workshops with looping vocalist Randolph Matthews inspired me to invest departmental resources in live looping both as a curriculum and outreach activity.

In 2015 I began a sabbatical in Berlin, focussed around organ performance and composing, and in early 2016 a particular experience led me to explore live looping with pipe organ. One day I came home from practising in *Sophienkirche*, and became frustrated with the arduous process of working on sound in electronic composition as compared to the already existing beauty of how live organ sounds in a resonant acoustic. Various experiments with organ and electronics followed, exploring different microphone techniques, hardware, software, and controllers, but I was struggling to retain either the beauty of the original organ sounds, or the freedom of manipulation with electronic effects. Thinking of the organ as a singing machine, as I do when accompanying hymns, led me to imagine working with organ and loop station as I had done previously with voice. I was concerned that the foot operated loop pedals I was familiar with would be too heavy to use at an organ console but found that the lighter, desktop, Boss RC-505, released in 2012 and aimed at vocalists, worked well.

Early performances for organ with live looping grew out of an Urban-Organ<sup>1</sup> project at *Golgothakirche* in Berlin, where I explored using a loop station to extend the possibilities of a one-manual organ, improvising hymn-introductions and other liturgical music using layered

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<sup>1</sup> 'Urban-Organ' refers to the outreach project I have run since 2012 which focusses on collaborative composition based around organ and electronics: 'Metamorphosis-Urban-Organ'. [www.urbanorgan.org](http://www.urbanorgan.org)

textures and canonic techniques. Having heard the potential of organ with live looping to reimagine traditional church music, theologian Dr. Volker Jasztrembski approached me to collaborate on an outreach project for university students. The aim of the was to explore the theology behind 16<sup>th</sup> and 17<sup>th</sup> century Lutheran hymns for reinterpretation in the contemporary context and included a commission for me to compose chorale suites for organ and live looping. Through this collaboration I not only gained experience in composing and performing as a loop artist but was also inspired to embark on practice research into live looping, specifically around organ with live electronics.

### What?

My compositional approach to live looping involves first determining a tone-row and rhythmic cell out of which a nexus of loops is constructed. Through a process of improvisation, often within the context of my work as a church musician, the loop nexus is then composed out into a partially fixed work. After a process of refinement involving further improvisation and performance in semi-formal settings such as church services, the work is ultimately notated but remains a mixture of fixed and free material with improvisation a key aspect of its realisation. Creating the loops which form the nexus is often a restrictive process where I fix certain parameters, sometimes in response to a pre-existing stimulus such as a hymn-melody. I often aim to have no more than five loops in the nexus, spread out across a spectrum of pitch groups (low to high) and a range of different timbres. Often, as a rule of thumb, the five tracks are split broadly into the following musical roles: melody and counter-melody (mid-range), bassline (low), high-pitched often rhythmic motif (high), and rhythm (mixture).

The 'composing out' of the loop nexus into an extended piece feels like playing an elegant game of *Tetris*, with a similar goal of avoiding overcrowding but in a sonic, rather than visual, sense. This often manifests itself on the musical material as a process of redaction, where fragments of the core loops are isolated for further development with an attempt to cultivate musical imagery in the mind of the listener, and is one of the primary ways in which I use perception as material in composition for live looping.

### How?

Working as a church musician brings a unique perspective to music making, with pressure to produce different repertoire every week, particularly in Germany where, in the Lutheran

tradition, three significant works for organ or choir in each service plus improvised hymn introductions and harmonisations is the normal expectation. My live looping practice is grounded in the rhythm of my working life and I am fortunate that the parishes where I play have been supportive of experimentation being integrated into services by exploratory improvisation or performing live looping works in the place of more traditional repertoire.

Strategies for developing these experiments into fixed, or partially fixed, works has emerged out of practical exploration with various technology and contexts. However, the in-built parameters of the BOSS RC-505 loop station have influenced my compositional approach directly through the restriction of having a maximum of only five simultaneous tracks in normal usage, though this can be expanded with overdubbing and using it in parallel with other equipment. I find that restricting myself to five motives as a maximum loop nexus is a helpful guideline for structuring musical ideas, helping me to keep a balance between repetition and duration of the piece. Through engaging with listener feedback I have noticed a remarkable difference between tolerance for the extent of looped-repetition which the average listener, in a passive role, has compared to the loop artist performing in an active role. I have also found this restrictive five-loop nexus approach highly effective as a pedagogical framework for collaborative composition in workshops with young people; most recently on behalf of Urban-Organ and Yorkshire Sound Women Network (YSWN).

During this practice research project I have explored further options for live looping, expanding my range of available tools to include Ableton Live software, DJ controllers and additional effects processors. Personal preference plays a large part in choosing equipment, including ergonomics associated with different instrumentation. Having a range of possibilities is particularly helpful for me as a loop artist working with pipe organ, however, as the inherent variation in instruments and acoustics means that every context needs a bespoke approach. For in-depth discussion of this aspect of my research, please refer to the essay *Extending the pipe organ with electronics: towards a symbiotic relationship between the analogue and the digital* which is included in this portfolio.

In response to challenges in performing solo live looping works, as well as collaborative projects, part of this practice research has been to develop a notational approach for live looping. The system which I use consistently across the works submitted in my MA by

Research portfolio combines an extended form of traditional staff notation with symbols and colour-coding in response to the following requirements:

- Precisely indicating live-looping techniques and electronic effects without appearing so complicated that it is illegible in live performance.
- Facilitating transferability between different instrumentation and (in the case of organ) different instruments, contexts, and electronic set-ups for live-looping.
- Supporting a balance between the musically fixed and free; fixed enough to represent the individual character of each piece, but free enough to incorporate improvisation as a key element of live-looping practice.

My notational approach for live looping is summarised in the following excerpt from *A Guide to Live Looping*, included as part of performance directions for live looping pieces:

The score represents a framework within which the performer journeys through the musical material... Although the sonic nature of the loops and how they fit together is crucial to realising the composition, the performer is encouraged to explore different approaches to organising the musical material, both for expressive and practical reasons. This may include: adjusting the structure of the piece when recording loops, or curating their playback; subjectivity in manipulating the sound using electronic effects; improvising melodic or rhythmic material in certain passages. As a general approach to melodic and rhythmic improvisation, the notated material should be taken as a starting point and deconstruction techniques should form the basis of further development and invention. (Hulme, 2019)

### **Musical material in live looping composition: rhythm, pitch, perception**

“Music takes places in time, but repetition beguilingly makes it knowable in the way of something outside of time.” (Margulis, 2014, p. 7)

## Rhythm

A flexible approach to time, pulse and rhythm is central to live looping. Live sound produced in performance must be mapped against the metronomic grid of electronic hardware or software, and therefore many opportunities for the use of perception as musical material exist in the interface between these two interpretations of time. Musical expression often depends on micro-changes in timing, sometimes referred to as ‘musical time’, and therefore quite ordinary aspects of acoustic performance practice become challenging when working within an externally imposed matrix. As an example from my own live looping experience, motives which do not begin on the first beat of a bar require special handling. In order to achieve the clean recording of a loop containing an anacrusis the performer needs either to convince themselves that the first beat of a bar is the last beat of the bar, (e.g. beat 1 is beat 4 in a bar of 4/4), or pre-record a silent loop in order that the new material can be overdubbed rather than recorded.

In my practice anacrusis are a recurring challenge as they appear in many of the melodies I use as a basis for live looping in a liturgical context. In both *Wer nur den lieben Gott lässt walten* and *BWV 542 Remix* I trick myself into rethinking beat 1 as beat 4, using nuance of expression to emphasise beat two as a clear ‘downbeat’. In each of these examples, however, I made a different notational decision. In the 4/4 first movement of *Wer nur den lieben Gott lässt walten*, the upbeat in the melodic loop on Track 1 is important in supporting a *Seufzer* effect by placing a falling minor 9<sup>th</sup> appoggiatura on the downbeat of what is heard as bar 1. Because of the complexity in the syncopation of Track 2’s chordal loop, I decided to notate this movement as it should be played rather than as it heard, (i.e. with beat 1 behaving as if it is beat 4), adding expressive markings to support this effect in performance:

### Example A:

*Wer nur den lieben Gott lässt walten* (I)

Track 1 Loop as notated



### Example B:

*Wer nur den lieben Gott lässt walten* (I)

Track 1 ‘Seufzen’ loop as heard



Conversely, *BWV 542 Remix* is notated as it is heard rather than as it should be played because I found playing the passages quoted directly from the original piece challenging if notated with an alternative rhythmic emphasis; i.e. with the anacrusis occurring after the bar-line. However, in the score I have added additional ‘tick’ bar-lines to indicate where beat 1 is according to the looper matrix.

Example C: *BWV 542 Remix* – main fugal subject notated as recording of Track 1 loop

Metre and time signature are always fixed parameters in a looper’s matrix but the listener’s perception of time can be warped to expressive effect through compositional means. For example, the time signature in *Wer nur den lieben Gott lässt walten* (mvt. III) is felt as a slow 12/8 but notated in 3/4 at  $\text{♩} = 132$  because the faster tempo facilitates more effective loop manipulation with rhythmic effects. In addition, a sense of timelessness is created in *Es ist gewisslich an der Zeit* (mvt. III) by the recording and then overdubbing of similar, but accelerating, iterations of a descending phrase (Example D). The result is a shimmering aural surface which appears to be unshackled to a particular pulse when heard against the rubato melodies of the opening, but whose emphasis shifts into a mesh of cross-rhythms when the vocal loop ‘*Komm doch!*’ appears, locking the listener’s perception into the metronomic grid for the rest of the piece:



Example D: *Es ist gewisslich an der Zeit* - Track 3 loop

(2<sup>nd</sup> line of the score / 2<sup>nd</sup> minute of the piece)

Careful placement of rhythms across a whole loop nexus, including those in pitch-based material, is effective as it avoids sonic overcrowding on particular beats and supports electronic manipulation of loops as a piece develops. In *The Tyger*, my setting of the 1794

poem by William Blake for soprano and loop artist, percussive fragments from the original text are recorded and overdubbed surreptitiously throughout the piece to form a 2-beat loop aggregate. Electronic manipulation of the resulting rhythmic pattern, outlined in Table 1, using effects such as *Beat Repeat* and *Beat Shift* is made more effective by the soprano producing consonants with the percussive precision of a beatboxer. In the phrase, ‘*Tyger Tyger, burning brigh - t*’, for example, a sliver of silence is required between the open sound ‘*brigh*’ and the percussive ‘*t*’ in order that the ‘closed hi-hat’ quality of the consonant can be recorded without sound bleeding from the sung vowel which precedes it.

Table 1: breakdown of the 2-beat rhythmic loop on Track 1 of *The Tyger*

Percussive consonants as they occur in the original text	Percussive sounds notated as individual layers	Compound of rhythmic loop: 2-beat loop x 2
<i>what dread gra-s-p?</i> <i>Tyger Tyger, burning brigh - t</i> <i>and what dread fee-t?</i> <i>Bh-bhm</i> (heartbeat sound) <i>what the ch-ain?</i> <i>Hhh</i> (breathy sound)		

Similarly, in *Wenn?, wenn?; Warum?* the quaver rests before and after ‘*meine Stärke*’ in bar 46 facilitate the clean recording of the loop so that *Beat Repeat* can subsequently be used to build up tension in the final section of the piece: ‘*Stärke, Stärke, Stärke...*’

Example E: *Wenn?, wenn?; Warum?* (Bar 46)



The perceptual relationship between musical time and metronomic time is a recurring theme in my work as a way of exploring interplay between the analogue and the digital. For example, *Bach Remix BWV 542* juxtaposes contrasting rhythmic interpretations of Bach’s famous organ fugue while *I lift my eyes and see shadows on the hills* asks the performer to ‘play the acoustic

space as a separate instrument in duet with the organ'<sup>2</sup>, oscillating between fermatas that follow a perception-driven sense of time and the metronomic tempo marking: ♩ = 50

"Duration of fermatas should be determined by listening to the sound in the space, where appropriate, guided by the length of time it takes the performer to silently read the Psalm 121 fragments printed in the score."<sup>3</sup>

## Pitch

Melody is important for sustaining musical interest in a live looping piece but the balancing of pitch-based material across a loop nexus requires a similar sensitivity to that discussed in relation to rhythm. In layering pitches simultaneously on top of each other harmony unavoidably emerges and, while this can be a particularly exciting development for monophonic instruments, working largely with the organ, a homophonic instrument, has led me to use harmony sparingly in live looping composition. The cyclical nature of live looping requires an approach to handling pitch which is not teleological as in functional diatonicism and, in response to this challenge, my compositional approach often centres around a particular mode or tone-row. I have found that a tonal language built around 2nds, 4ths, 5ths, and 7ths is particularly effective because the gravitational pull towards a particular tonal centre is weaker, presenting wider possibilities for working within a cyclical structure.

As an organist, working within a mode or tone-row feels quite instinctive as liturgical music is often based on modal plainsong melodies, or more contemporary tone-rows such as Messiaen's "limited modes of transposition" (1944). Examples of this modal / tone-row approach can be found in *The Tyger* which remains in Aeolian mode in G throughout and *neural (dis)torsion* as its tone-row (Example F) is derived from the pitches of four clarinet multiphonics used at particular moments in the piece.

Example F: *neural (dis)torsion* tone-row



<sup>2</sup> Performance directions: *I lift my eyes and see shadows on the hills* (Meditation for organ and acoustic space), Hulme, Pam (Berlin, 2018).

<sup>3</sup> Performance directions: *I lift my eyes and see shadows on the hills* (Meditation for organ and acoustic space), Hulme, Pam (Berlin, 2018).

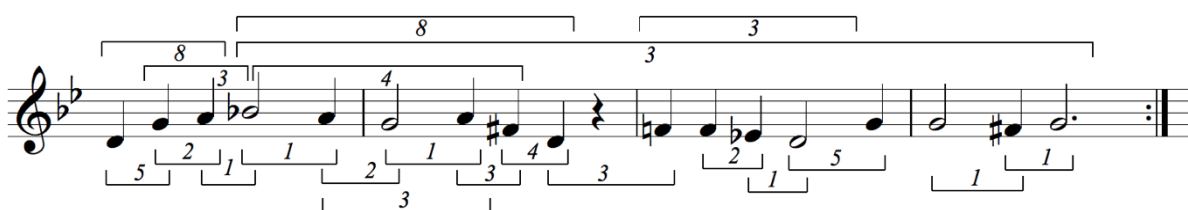


When working with pre-existing musical material such as in *Wer nur den lieben Gott lässt walten* and *Es ist gewisslich an der Zeit* I begin by analysing the original melodies to ascertain a tonal centre and identify significant pitches and melodic fragments which could form the basis of the tone-row and composed material. Analysis of *Wer nur den lieben Gott lässt walten*, for example, centred my interpretation in G minor, especially with the strong secondary presence of D major as G minor's dominant chord, but the chromatic shift from F# to F led me to an extended diatonicism which closely follows the chromatic inflections inherent to the original melody:

Example G: Analysis of the first section of the chorale melody *Wer nur den lieben Gott lässt walten*, focussing on three broad tonal groupings of notes.



Example H and Table 2 outline my analysis of the first section of the *Wer nur den lieben Gott lässt walten* chorale melody, showing intervals between adjacent pitches and intervals which I consider to be significant over a wider span, for example the minor 6<sup>th</sup> at the opening which is both one of the most recognisable features of the melody and also the range of the whole melody.



Interval types	Intervals as semitones	Frequency as adjacent pitches	Frequency as wider significant intervals
repeated note	0	2	
minor 2 <sup>nd</sup>	1	6	
major 2 <sup>nd</sup>	2	3	
minor 3 <sup>rd</sup>	3	2	5
major 3 <sup>rd</sup>	4	1	1
perfect 4 <sup>th</sup>	5	2	2
perfect 5 <sup>th</sup>	7		1
minor 6 <sup>th</sup>	8		1

Through this analysis I was led towards using a *Seufzer* motive in order to resonate with the vast majority of adjacent pitches in this melody that move stepwise with a predominance of minor 2nds. The *Seufzer*, or ‘sighing’ motive, as a falling, stepwise figure prevalent in Baroque organ music, is often used to express sadness or distress and the word *Seufzer* itself appears as a verb in verse 1 of the original hymn text: ‘*beseufzen unser Ungemach*’, (‘bemoan our powerlessness’). The *Seufzer*-inspired motive in my interpretation of *Wer nur den lieben Gott lässt walten* recurs repeatedly as a yearning minor 9<sup>th</sup> (G min9) or minor 13<sup>th</sup> (C min13) on the first beat of each macro 4-bar phrase.

Example I: Illustration of how the *Seufzer*-inspired motive recorded onto Track 1 in *Wer nur den lieben Gott lässt walten* (mvt. I) is derived directly from the original chorale melody.

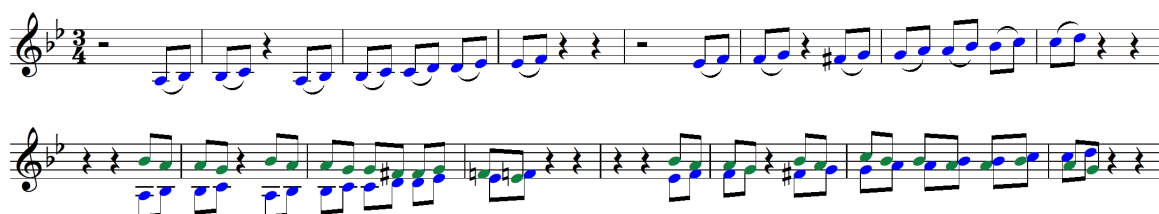


This motive is further developed throughout *Wer nur den lieben Gott lässt walten*, at first in Movement I where it follows the chromatic shift from F# to F and back to F# in the original chorale melody, giving the impression of a harmonic unravelling, (Example J), and in Movement III where it appears in inexact inversion, first recorded then overdubbed with the extended version from movement I (Example K). Although Movement III is in 3/4, rather than 4/4 as in Movement I, the upbeat-to-downbeat figure remains a key characteristic of this loop with its weak-to-strong emphasis. Additionally, the contrary motion between the two melodies here seeks to express the subverting of the established world order suggested in verse 6 of the hymn: ‘*Den Reichen klein und arm zu machen, den Armen aber groß und reich*’, (‘To make the rich small and poor, but the poor great and rich’). The crunching 2nds that emerge out of the imperfect layering of these chromatic melodies help to build tension towards the climax of the whole chorale suite, and compatibility within the nexus is supported by the loops’ close relationship to the original hymn-melody.

Example J: Illustration of how the extended *Seufzer*-inspired melody recorded onto Track 3 is derived from the original chorale melody in *Wer nur den lieben Gott lässt walten* (mvt. I).



Example K: inexact inversion (in blue) and 3/4-adapted repeat of the extended *Seufzer*-inspired melody (in green) as recorded / overdubbed onto Track 4.



*Es ist gewisslich an der Zeit* approaches tonality in a different way, particularly in the second movement where both fixed and improvised melodic material oscillates between two different tone-rows, each of which is attached to two specific bars across a 4-bar pattern. Towards the end of Movement II *Beat Repeat* is used to suspend the looped material in the 4<sup>th</sup> bar of this 4-bar pattern, trapped in its whole-tone tonality, over and with which the performer improvises an anxious, downward-spiralling melody (as shown in Example F, bars 2 & 4), reflecting the descent into hell described in the fourth verse of the hymn: ‘*von Christus in die Hölle*’ (‘away from Christ into hell’).

Example F: *Es ist gewisslich an der Zeit* (mvt. II). The two tone-rows as they apply across the harmonic progression of the 4-bar loop nexus



In *Es ist gewisslich an der Zeit*, the falling semiquaver motives heard throughout are an example of how deriving material from a pre-existing melody and working within a tone-row

combine effectively in my compositional approach to live looping. Echoes of the original hymn-melody's 5<sup>th</sup> phrase (Example L) appear in all three movements but variation is used to make each of them compatible with the loop nexus, despite different time signatures and the oscillating tone-rows discussed earlier (Example N):

Example L: *Es ist gewisslich an der Zeit*, chorale melody (5<sup>th</sup> phrase)



and live electronics. However, the personal journey which took place for me and my family during the course of this research project has widened the focus to include other psychological and neurological aspects of musical perception and how these can be used compositionally as musical material. Through the compositions and improvisations in my MA in Research portfolio I explore perception in three main ways: using spatialization effects to manipulate the surface of what the listener hears; looping as a representation of the 'inner voice'; exploiting the phenomenon of 'musical imagery' (Sacks, 2007) through a redactive compositional approach which relies on shared cultural memory.

Live looping an acoustic instrument always occurs in conjunction with an electronic device requiring amplification and therefore shifting perception around the locus of sound can be used to expressive effect. The inherently acousmatic nature of the pipe organ means that an organist must engage with the acoustic space in performance because the instrument is inextricably bound up with the space in which it finds itself. The interplay between acoustic sound source and playback in live looping is an extension of this and can be heard across all my pieces for organ and live looping, with striking examples in the *BWV 542 Remix* and *Es ist gewisslich an der Zeit* (I) where a pre-existing melody is played live and recorded before being played immediately as a loop. In both cases the playback level will be set so that the second iteration is indistinguishable from the first, thereby supporting the use of perception as musical material in these works.

When performing, *S\_a \_ \_ / \_ y / \_ \_* (II), an improvisation for organ and live electronics, I unusually perform without following a click track so that I can fully focus on responding to the sound in the acoustic space. Using listening as an organising factor in this way results in a very different performing experience and is most effective when spatial manipulation effects are possible, either through panning or with more complex configurations such as making use of the double-tiered surround sound systems often installed in churches with a gallery. Listening to the sound was also the principal organising factor in my improvised performance at the *Orgelpark* in Amsterdam, which focussed on a particular reiterative effect built into the 'hyperorgan', where the valves can be programmed to play a *licer* effect acoustically by allowing air into the pipes in precisely controlled, halting manner.

Looping as a representation of the ‘inner voice’ appears in *Wenn?, wenn?; Warum?* and *The Tyger*, where the soprano part is rooted in the operatic tradition, presented ideally as an embodied performance in order to strengthen the contrast between live voice and the metaphorical inner voice. Although there are many examples of vocalists working solo with live looping, in these pieces it is important that the soprano has no control of the loops and their electronic manipulation because the unpredictability of what she hears being created out of the echoes of her voice contributes to the anxiety which builds throughout.

*neural (dis)torsion* and *S\_a\_\_/\_y/\_\_* both engage with repetition built into the neurological act of remembering and make use of the ‘musical imagery’ phenomenon. There is an inner voice speaking here too, but of a different kind; that of an individual suffering from the process of neural degeneration, specifically through Posterior Cortical Atrophy (PCA). This rare condition takes an unpredictable path of destruction through the brain and, unusually for variants of Alzheimer’s disease, it begins towards the back, meaning that sensory processing, sequencing, and movement are affected long before a sense of awareness around the Self disappears; in fact, the Self can remain right up until the end. (Crutch et al., 2012)

*neural (dis)torsion* explores the distress and anxiety which my mother experienced during the late stages of PCA, a phase of hallucinations and neurological cul-de-sacs, but with full awareness that reality was continually twisting. (Crutch et al., 2018) Written for clarinet and imaginary loop machine, *neural (dis)torsion* follows the self-imposed Boss RC-505 inspired restriction of having only five motives in the loop nexus, although the piece is entirely acoustic. Precision of rhythmic placement across the loop nexus is crucial here as the physical boundaries of what the clarinettist can play influence what is possible at any one moment. *neural (dis)torsion* is therefore a study in redaction, with certain fragments of each loop sensitively erased at different points, and placed across the piece. Aside from the crisis points of frustration and distress signified by screeching multiphonics, *neural (dis)torsion* explores to what extent the listener makes use of the ‘musical imagery’ phenomenon to ‘fill in the gaps’ by continuing to hear the loops in their entirety even though they are only played partially:

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“Physiological confirmation of ‘filling in’ by involuntary musical imagery has recently been obtained by William Kelley and his colleagues at Dartmouth, who

used functional MRI to scan the auditory cortex while their subjects listened to familiar and unfamiliar songs in which short segments had been replaced by gaps of silence. The silent gaps embedded in familiar songs were not consciously noticed by their subjects, but the researchers observed that these gaps induced greater activation in the auditory association areas than did silent gaps embedded in unknown songs with lyrics and without lyrics.”(Sacks, 2007, p. 33)

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The ‘shared cultural memory’ aspect of musical imagery is explored specifically in three pieces: *Wer nur den lieben Gott läßt walten*, *Es ist gewisslich an der Zeit*, and *S\_a\_/\_y/\_*. Shared cultural memory is a device often found in organ repertoire and liturgical improvisation, relying on the congregation’s knowledge of a particular hymn-tune as a unifying element in the background of the music. Of course, this is inherent to many musical traditions around the world but the potential for communication through this phenomenon is explored in *S\_a\_/\_y/\_*, inspired by a very personal experience. This piece is about the ‘slipping away’ in end-stage PCA, where flashes of recognition around shared cultural memories are present even in the final stages of neural degeneration. As with the two chorale suites for organ and live looping, *S\_a\_/\_y/\_* was created out of analysing pre-existing music, but this time using a mixture of pop songs and particular melodic inflections in my mother’s voice; tinged with the lilting lyricism of a Wirral accent. I took a redactive approach to particular phrases from two songs which became unexpectedly meaningful in that situation: *Stand by me* sung by Ben E. King (King, Leiber, & Stoller, 1961) and Cliff Richard’s *When the girl in your arms is the girl in your heart*. (Bennett, Tepper, & Webb, 1961) I focussed on particular phrases whose text had been particularly meaningful for me during that experience, gradually deleting their musical characteristics until the fragments are barely recognisable to the uninitiated listener.

Similarly, certain fragments of the lilting accent still had the potential to communicate, even though many other characteristics of the speech, such as words, were missing. In the Wirral a high-pitched “*erm*” (IPA:  $\epsilon$ ), is often used a device for punctuating conversation as a pre-emptive signal that a person is about to speak, and this inflection finds its way into the opening, and recurring, melody before subsiding into mumbling figures. Now and again there

are bursts of melody signifying attempts at speech, though always without words: linguistically imprecise, yet somehow emotionally exact.

## **Conclusion: a compositional approach**

In this essay I have explored how perception is not only used as musical material in live looping but is a core element of the practice. Live looping's inherent repetition demands a different approach to organising and developing musical ideas, which seems to provoke a different response in the average listener: "Repetition draws us into music, and repetition draws music into us. It represents a starting point for confronting some of music's most elusive and defining qualities." (Margulis, 2014, p. 180)

While looping performances are often characterised by an apparently spontaneous creativity, behind the scenes there is usually a practice built on striving for precision and a carefully calculated, pre-determined loop nexus which functions as a scaffold for further, freer musical invention. Calculation of how this nexus of loops fits together is largely hidden from the audience, sometimes masked by a distinctive on-stage persona or using narrative as a structural device. As discussed, some loop artists break the fourth wall and the visible laying down of loops becomes part of their performance aesthetic. However, the acousmatic nature of the organ limits the potential of this approach in much of my work.

Using examples from the works in the portfolio for my MA by Research I have demonstrated different ways in which I construct the nexus of loops in my practice, both in freely composed pieces and in those which are based on pre-existing musical material. Furthermore, I have outlined a range of strategies for approaching rhythm and pitch-based motives in composition for live looping which support the cultivation of perceptual phenomena in the listener's mind. Technology demands that live looping occurs in conjunction with playback and spatialization can therefore be used as an effective expressive tool, with this being particularly relevant for my work with pipe organs and the spaces which they inhabit. Perception recurs thematically as well as compositionally in my music and the final section of this essay has discussed how aspects of perception can be used metaphorically in live looping practice.



Live looping emerged out of musical practices which made analogue use of perceptual phenomena such as musical imagery. Despite its development into an art-form which typically relies on digital equipment, live looping has not only retained but also strengthened this connection to perception as musical material; one way of interpreting the conception of 'manipulating musical surface' which is the unifying concept of this whole research project. With its cyclical layering of acoustic sound, in conjunction with electronic manipulation, live looping has the potential to create a sonic world that seemingly mirrors contemporary life in its symbiosis of the analogue and the digital.

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# **Wer nur den lieben Gott läßt walten**

Chorale Suite for Organ & Live Looping

Pam Hulme

# **Wer nur den lieben Gott läßt walten**

Chorale Suite for Organ & Live Looping

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# Wer nur den lieben Gott läßt walten

## Chorale Suite for Organ & Live Looping

Evangelische Gesangbuch 369 Text & Melody: Georg Neumark (1641/1657)

1. Wer nur den lie - ben Gott läßt wal - ten und hof - fet auf ihn al - le - zeit,  
den wird er wun - der - bar er - hal - ten in al - ler Not und Trau - rig - keit.

Wer Gott, dem Al - ler - höch - sten, traut, der hat auf kei - nen Sand ge - baut.

### Composer's Note:

*Wer nur den lieben Gott läßt walten* takes as its starting point the eponymous chorale described by its composer as a *Trostlied*; a song of consolation. This chorale is well-known in the German Lutheran Church and has been reworked in compositions by Bach, Brahms, and Schumann, amongst others. My interpretation, a Chorale Suite in three movements, was part of a collaborative project with theologian Pf. Dr. Volker Jastrzembksi in Berlin, reinterpreting four hymns from the 16<sup>th</sup> and 17<sup>th</sup> centuries for a contemporary context, including input from Humboldt University theology students.

In the first movement, *die Schweren Sorgen*, there is much wailing and plashing as the melody is transported into an intense, rhythmic tango-style 4/4, dominated by a falling *Seufzer*-inspired motive. The second movement, *ein wenig stille*, loops the first fragment of this motive into an electronically imperfect, pulsing *Bb* and the performer is asked to respond with liturgical-style improvisation, passing through specific keys, but guided structurally by listening in closely to the loop and how it interacts with the live organ sounds in the acoustic. Emerging from this different kind of musical consciousness, the third movement, *der rechte Wundermann*, begins tentatively, but builds layers to a jubilant, triple-time exclamation of what a *Wundermann* (a miracle worker) could be, both then and now; upending unfairness.

*Wer nur den lieben Gott läßt walten* was first performed in 2017 as part of an evening service at Golgothakirche, Berlin, interspersed with readings, homily, and congregational singing of the hymn-verses relating to each movement, as well as two settings for organ by J. S. Bach, (BWV 642 & 647), and improvised *Vorspiele* (hymn introductions) in various styles. This final revised version was completed in 2019 after a period of practice research into organ with live electronics and live looping practice.

### Performance Directions:

During the rehearsal process, the performer should explore and internalise the original hymn-melody to facilitate fluid improvisation using motivic fragments which are derived from it. This piece is intended to be played from the score in conjunction with the supplementary sheet in order that expressing the meaning of the text remains a central part of the realisation, as well as providing an *aide-memoire* for the melody. The given English is a directly-translated, unpoetic text, intended to be a useful interpretation of the original German for performance.

Guidance on interpreting the notation and approaching live looping as a performance practice more generally can be found in: *A Guide to Live Looping*. Working with organ and live looping brings particular challenges because of the uniqueness of each performance context; the constellation of instrument, acoustic, and architecture. While many different solutions can be found to issues of microphone placement and playback, my personal approach centres around transferability and portability between different contexts. A summary of my recent practice research into this can be found in the document: *A Transferable Approach to Organ and Live Electronics* (Hulme, MA, University of Huddersfield, 2020).

Pam Hulme, Berlin 2019.

# Wer nur den lieben Gott läßt walten

Chorale Suite for Organ & Live Looping  
Supplementary Sheet



## Movement I – *‘die schweren Sorgen’*

- |  |   |
|--|---|
| <p>1. Wer nur den lieben Gott läßt walten,<br/>und hoffet auf ihn allezeit,<br/>Den wird er wunderbar erhalten<br/>in aller Not und Traurigkeit.<br/>Wer Gott, dem Allerhöchsten, traut,<br/>der hat auf keinen Sand gebaut.</p> <p>2. Was helfen uns die schweren Sorgen,<br/>was hilft uns unser Weh und Ach?<br/>Was hilft es, dass wir alle Morgen<br/>beseufzen unser Ungemach?<br/>Wir machen unser Kreuz und Leid<br/>nur größer durch die Traurigkeit.</p> | <p>He who allows only dear God to rule him<br/>and always places hope in Him,<br/>He will receive the wondrous<br/>(even) in all distress and sorrow,<br/>He who trusts God, the highest of all,<br/>he has not built on sand.</p> <p>What help are heavy worries to us,<br/>what help is our woe and alas (complaining)?<br/>What help is it, that every morning we<br/>bemoan our adversity (powerlessness)?<br/>We make our cross (torment) and sorrow<br/>only greater through the sadness.</p> |
|--|---|

## Movement II – *‘ein wenig Stille’*

- |   |  |
|---|--|
| <p>3. Man halte nur ein wenig Stille<br/>und sei doch in sich selbst vergnügt,<br/>wie unsers Gottes Gnadenwille,<br/>wie sein Allwissenheit es fügt;<br/>Gott, der uns sich hat auserwählt,<br/>Der weiß auch sehr wohl, was uns fehlt.</p> <p>4. Er kennt die rechten Freudenstunden,<br/>er weiß wohl, wann es nützlich sei;<br/>wenn er uns nur hat treu erfunden<br/>und merket keine Heuchelei,<br/>so kommt Gott, eh wir's uns versehn,<br/>und lässet uns viel Guts geschehn.</p> | <p>One should keep a little silence<br/>and be nevertheless amused with yourself<br/>as with our God's gracious will,<br/>as his omniscience arranges.<br/>God, who has chosen us for himself,<br/>knows very well what we are lacking.</p> <p>He knows the right moments of joy,<br/>he knows well when it will be useful:<br/>if only he has found us faithful<br/>and notices no hypocrisy,<br/>so God comes, before we know it,<br/>and bestows much good upon us.</p> |
|---|--|

## Movement III – *‘der rechte Wunderman’*

- |   |  |
|---|--|
| <p>5. Denk nicht in deiner Drangalshitze,<br/>dass du von Gott verlassen seist<br/>und, dass ihm der im Schoße sitze,<br/>der sich mit stetem Glücke speist.<br/>Die Folgezeit verändert viel<br/>und setzet jeglichem sein Ziel.</p> <p>6. Es sind ja Gott sehr leichte Sachen<br/>und ist dem Höchsten alles gleich:<br/>Den Reichen klein und arm zu machen,<br/>den Armen aber groß und reich.<br/>Gott ist der rechte Wundermann,<br/>der bald erhöhn, bald stürzen kann.</p> <p>7. Sing, bet und geh auf Gottes wegen,<br/>Verricht das Deine nur getreu<br/>und trau des Himmels reichem Segen,<br/>so wird er bei dir warden neu.<br/>Denn welcher seine Zuversicht<br/>auf Gott setzt, den verläßt er nicht.</p> | <p>Do not think in the heat of your trials<br/>That you hve been deserted by God<br/>and that hewho sits in His lap,<br/>will constantly feed himself with happiness.<br/>Eternity changes much<br/>and sets the goal for all things.</p> <p>It is, of course, for God very easily done<br/>and is all the same for the Almighty:<br/>To make the rich small and poor,<br/>but the poor great and rich.<br/>God is the true miracle worker,<br/>who can both suddenly raise up and cast down.</p> <p>Sing, pray and go on God's way,<br/>only perform your part faithfully<br/>and trust the Heavens' rich blessing,<br/>so that for you this blessing will come anew,<br/>For he who places his trust in God,<br/>He will not desert Him.</p> |
|---|--|



# A Guide to Live Looping

*Live looping: The recording and playback of music in real-time using either dedicated hardware devices such as loopers or samplers, or software with an audio interface.*

Live looping is a performance practice where the cyclical layering of live sound, in conjunction with electronic manipulation, creates a sonic environment which seemingly mirrors contemporary life; a symbiosis of the analogue and the digital. Within the repetitive matrix of live looping improvisation is crucial in maintaining 'liveness', but increasing musical complexity requires pre-planning, in other words, composition.

## General approach:

In live looping composition a nexus of loops built out of a particular tone-row and rhythmic cell has been 'composed out' into a partially fixed work. The score represents a framework within which the performer journeys through the musical material and, ideally, loops should be taken surreptitiously as part of a meaningful piece of music, rather than as an exercise in live looping technique. Although the sonic nature of the loops and how they fit together is crucial to realising the composition, the performer is encouraged to explore different approaches to organising the musical material, both for expressive and practical reasons. This may include: adjusting the structure of the piece when recording loops, or curating their playback; subjectivity in manipulating the sound using electronic effects; improvising melodic or rhythmic material in certain passages. As a general approach to melodic and rhythmic improvisation, the notated material should be taken as a starting point and deconstruction techniques should form the basis of further development and invention. Fluency with the technology is paramount so that unexpected sonic occurrences can be creatively integrated into the performance, rather than being experienced as a mistake.

The notational approach for live looping outlined below attempts to record and communicate the delicate balance between the fixed and the free, including details of fixed rhythmic, melodic, and technical elements, as well as setting parameters for improvisation. The score is playable using a range of live looping set-ups and has been realised in performance using both the Boss RC-505 Loop Station and Ableton Live with laptop and controllers. Much of the language used comes from the Boss RC-505 and therefore needs reinterpreting for use in other contexts, e.g. *clips* instead of *loops* in Ableton Live. Similarly, audio effects are split into *IFX ABC* and *TFX ABC*, meaning effects which are applied to the live sound (Input-FX) and effects which are applied to the recorded loops during playback (Track-FX). Similar outcomes in Ableton Live, for example, are achieved by allocating effects to SEND channels.

## Tips for effective live looping performance:

Before beginning, listening to a few bars of metronome is crucial for acclimatisation. Where there are multiple performers, everyone should hear the click continuously on headphones with the loop artist giving gestural signals as appropriate to avoid ambiguity about the looper's 1st beat of the bar.

If the piece starts on an upbeat (implied or actual) it is important to trick one's own mind into believing that beat 4 is beat 1. One approach would be to clearly count: 1 2 3 4 - **4** 1 2 3 - **4** 1 2 3 - **4**... etc. Whether using hardware or software for live-looping, the fixed temporal matrix is easier to manipulate electronically when the piece truly starts on **1** even if this appears aurally to be beat 4.

In order to achieve the effective recording of loops, so that they have sonically clean beginnings and endings without audible glitches, I suggest the following:

When recording a loop which starts on the first beat of the bar, pressing Record slightly beforehand is advisable, e.g. on beat 3½ in a bar of 4/4, initiating 'Ready-to-Record' mode, often signified by a flashing red light or icon.

Similarly, if possible, pre-set the length of the loop to be recorded and, after this timespan has elapsed in Record mode, allow it to switch automatically into Overdub mode for a beat or so while continuing to generate the sound source until pressing Play/Stop.

Once recorded, the effective Start/Stop of individual loops is often best achieved by using faders to control their volume, leaving them playing silently in the background.

# Live Looping Notation







## Live Looping

	Start looper
	Stop looper
	Record (single track)
	Overdub (single track)
	Automatic Overdub (preset loop-length)
	Play (single track)
	Play & loop directly
	Stop (single track)
	Recording at performer's discretion, (e.g. responding to effect or mic levels)
	Overdubbing at performer's discretion



## Guide to colour-coding

red	record
orange	overdub
green	play
blue	audio effects are applied
pink	pre-prepare effect or looping
brown	ad lib. (suggested material/action)

## Specifying tracks

	Record onto Track 1 ( <i>for example</i> )
	Overdub onto Track 1
	Play Track 1
	Play Track 1 with an effect applied
	Stop Track 1
	Play Track 1 ad lib.



Smaller boxes indicate tracks continuing to play without further action (e.g.):

	without audio effects applied
	with audio effects applied


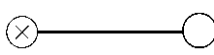

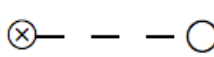
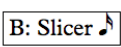


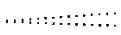

## Examples of symbols used in combination

	Record > Play (loop)
	Record > Stop (without playing)
	Overdub > Play (loop)


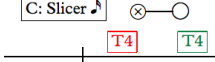

## General notation

	Ad lib. reiterations of looped material and/or improvised material
	Audible looped material where a visual cue in the score is helpful
★ <sub>1</sub>	Specific suggestion for live looping practice given elsewhere on the page, usually at start
M2	Two 'measures', indicating the number of bars to be preset onto each track

## Electronic effects

	Apply effect		Duration of specified effect
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	Apply effect to a specific track		
	Increase intensity of effect		
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## Example of symbols used in combination

	Indicates where an effect will be applied to live part		Apply <i>Slicer</i> effect at a semiquaver rate & Record on Track 4 then Play
	Indicates specific point of change		



Memory no. ....  
Retain setting from Mvt. I

T1: M2 Rev off / FX on

TFX C: Beat Repeat (♩)

# Wer nur den lieben Gott läßt walten

Chorale Suite for Organ & Live Looping, Mvt. II

"ein wenig Stille"

N.B.  
Looper stays in 4/4 but feel 1 as 4 with 2/2 emphasis.  
Organ is to be played manuals only throughout.  
Improvisation should be in a liturgical style, an act of meditation for the performer as well as for the listener.  
Deconstructing the original hymn-melody should be the starting-point for further smotivic development.  
Timings are given as an approximate guideline.

♩ = 78

8' Fl.

Change Beat Repeat (♩) TFX C: Beat Repeat (♩)

Organ

FX

T1 *ppp* *p*

re-centre focus around Track 1

Gm → B♭...

continue ad lib.

re-centre focus around Track 1

continue ad lib. with melodic 2- or 3- part counterpoint...

FX

T1

B♭ → E♭...

1'

→ B♭m...

2'

... ad lib....

... ad lib....

re-centre focus around Track 1

re-centre focus around Track 1

increasingly dissonant, syncopated clusters...

increasing space between clusters...

FX

T1

→ B♭...

3'

→ Gm...

return to melodic, contrapuntal style...

continue, with decreasing presence...

3'30"

T1

*pp*

T1

IFX A: Robot (Bb)  
IFX B: Guitar to Bass  
IFX C: Slicer P5 ♯

TFX A: Filter  
TFX B: Transpose (+5)  
TFX C: Beat Shift / *Beat Repeat* (♩)

"der rechte Wundermann"

repeat if overdubbing is necessary due to issues with balance or registration

# Wenn?, wenn?; Warum?

for soprano and loop artist

Pam Hulme

# Wenn?, wenn?; Warum?

for soprano and loop artist

“It’s not a case of ‘if?’, but ‘when?’” This fragment of an interview with a young man on the lunchtime news catapulted out of the radio at me. He was talking about his experience of mental illness as a loss of innocence... for him life will never be the same again, as the fear of relapse is now always present. I was in Berlin, immersed in the bilingual world of the expat, and in that moment the German word ‘*wenn*’ suddenly made absolute sense; the double meaning of both ‘if’ and ‘when’. For my work I had been preparing music for Good Friday, so the German words of Psalm 22 were ringing in my ears; the crying out, the helplessness, the loneliness, the vulnerability and, above all, the innocent confusion around being abandoned.

*‘Warum hast du mich verlassen?’* - ‘Why have you abandoned me?’

The text of *Wenn?, wenn?; Warum?* weaves ‘*wenn?*’ through particular verses from Psalm 22 which illuminate the humanness of the Good Friday story. Hearing the voice of a man feeling totally helpless and alone in these words resonated for me with the voice of the young man on the radio, asking not just ‘if?’, or ‘when?’, but also ‘why?’.

Mein Gott, mein Gott, warum hast du mich verlassen?  
Ich schreie, aber meine Hilfe ist ferne.

Mein Gott, des Tages rufe ich, doch antwortest du nicht,  
Und des Nachts, doch finde ich keine Ruhe.

Sei nicht ferne von mir, den Angst ist nahe;  
Den es ist hier kein Helfer.

Aber du, Herr, sei nicht ferne;  
Meine Stärke, eile, mir zu helfen!

My God, my God, why have you abandoned me?  
I cry out, but my help is far away.

My God, I call in the daytime, but you do not answer;  
and in the night, but I find no peace.

Be not far from me, for trouble is near at hand  
and there is no one here to help.

But you, Lord, be not far from me,  
my strength; hasten to help me!

## Performance Directions:

The looped material represents the inner voice of the singer, at first puncturing the texture subtly with echoes of the questioning ‘*wenn?*’ and, with the loop artist’s growing freedom to manipulate the sound electronically, distress, signified by unpredictable anxious bursts.

Both performers should listen to the looper on headphones throughout and remain in sight of each other so that the loop artist can give certain cues gesturally. The level of the playback must be audible to the loop artist in order for them to balance the looped material with the voice in such a way that it is ambiguous which sound is live and which is recorded, thereby giving an impression of manipulating the musical surface. Guidance on interpreting the notation, and approaching live-looping as a performance practice more generally, can be found in the document: *A Guide to Live-looping*. As well as live-looping equipment and a playback system, performing this piece requires one dynamic microphone as an input to the looper, placed on a stand at 90° to the soprano’s mouth so that she can influence the quality of the looped sounds by the extent to which she turns her head towards the microphone.

Pam Hulme, Berlin 2019.

# A Guide to Live Looping

*Live looping: The recording and playback of music in real-time using either dedicated hardware devices such as loopers or samplers, or software with an audio interface.*

Live looping is a performance practice where the cyclical layering of live sound, in conjunction with electronic manipulation, creates a sonic environment which seemingly mirrors contemporary life; a symbiosis of the analogue and the digital. Within the repetitive matrix of live looping improvisation is crucial in maintaining 'liveness', but increasing musical complexity requires pre-planning, in other words, composition.

## General approach:

In live looping composition a nexus of loops built out of a particular tone-row and rhythmic cell has been 'composed out' into a partially fixed work. The score represents a framework within which the performer journeys through the musical material and, ideally, loops should be taken surreptitiously as part of a meaningful piece of music, rather than as an exercise in live looping technique. Although the sonic nature of the loops and how they fit together is crucial to realising the composition, the performer is encouraged to explore different approaches to organising the musical material, both for expressive and practical reasons. This may include: adjusting the structure of the piece when recording loops, or curating their playback; subjectivity in manipulating the sound using electronic effects; improvising melodic or rhythmic material in certain passages. As a general approach to melodic and rhythmic improvisation, the notated material should be taken as a starting point and deconstruction techniques should form the basis of further development and invention. Fluency with the technology is paramount so that unexpected sonic occurrences can be creatively integrated into the performance, rather than being experienced as a mistake.

The notational approach for live looping outlined below attempts to record and communicate the delicate balance between the fixed and the free, including details of fixed rhythmic, melodic, and technical elements, as well as setting parameters for improvisation. The score is playable using a range of live looping set-ups and has been realised in performance using both the Boss RC-505 Loop Station and Ableton Live with laptop and controllers. Much of the language used comes from the Boss RC-505 and therefore needs reinterpreting for use in other contexts, e.g. *clips* instead of *loops* in Ableton Live. Similarly, audio effects are split into *IFX ABC* and *TFX ABC*, meaning effects which are applied to the live sound (Input-FX) and effects which are applied to the recorded loops during playback (Track-FX). Similar outcomes in Ableton Live, for example, are achieved by allocating effects to SEND channels.

## Tips for effective live looping performance:

Before beginning, listening to a few bars of metronome is crucial for acclimatisation. Where there are multiple performers, everyone should hear the click continuously on headphones with the loop artist giving gestural signals as appropriate to avoid ambiguity about the looper's 1st beat of the bar.

If the piece starts on an upbeat (implied or actual) it is important to trick one's own mind into believing that beat 4 is beat 1. One approach would be to clearly count: 1 2 3 4 - **4** 1 2 3 - **4** 1 2 3 - **4**... etc. Whether using hardware or software for live-looping, the fixed temporal matrix is easier to manipulate electronically when the piece truly starts on **1** even if this appears aurally to be beat 4.

In order to achieve the effective recording of loops, so that they have sonically clean beginnings and endings without audible glitches, I suggest the following:

When recording a loop which starts on the first beat of the bar, pressing Record slightly beforehand is advisable, e.g. on beat 3½ in a bar of 4/4, initiating 'Ready-to-Record' mode, often signified by a flashing red light or icon.

Similarly, if possible, pre-set the length of the loop to be recorded and, after this timespan has elapsed in Record mode, allow it to switch automatically into Overdub mode for a beat or so while continuing to generate the sound source until pressing Play/Stop.

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# Live Looping Notation







## Live Looping

	Start looper
	Stop looper
	Record (single track)
	Overdub (single track)
	Automatic Overdub (preset loop-length)
	Play (single track)
	Play & loop directly
	Stop (single track)
	Recording at performer's discretion, (e.g. responding to effect or mic levels)
	Overdubbing at performer's discretion



## Guide to colour-coding

red	record
orange	overdub
green	play
blue	audio effects are applied
pink	pre-prepare effect or looping
brown	ad lib. (suggested material/action)

## Specifying tracks

	Record onto Track 1 <i>(for example)</i>
	Overdub onto Track 1
	Play Track 1
	Play Track 1 with an effect applied
	Stop Track 1
	Play Track 1 ad lib.



Smaller boxes indicate tracks continuing to play without further action (e.g.):

	without audio effects applied
	with audio effects applied


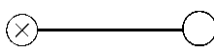

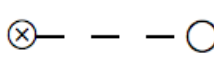
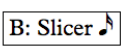


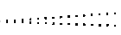

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
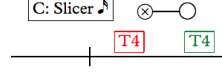

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	Indicates where an effect will be applied to live part		Apply <i>Slicer</i> effect at a semiquaver rate & Record on Track 4 then Play
	Indicates specific point of change		



# **Es ist gewisslich an der Zeit**

Chorale Suite for Organ & Live Looping

Pam Hulme

# **Es ist gewisslich an der Zeit**

Chorale Suite for Organ & Live Looping

Pam Hulme

## **Contents**

Composer's Note and Performance Directions

Supplementary Sheet - Melody and Text

A Guide to Live Looping

Movement I "Ich bin!"

Movement II "Bist du?"

Movement III "Wer bin ich?"

# Es ist gewisslich an der Zeit

## Chorale Suite for Organ & Live-Looping

Evangelisches Gesangbuch 149

Text: Bartholomäus Ringwaldt (1586)  
Melody: Martin Luther (1529)  
based on *Dies irae, dies illa* (12th Century)

1. Es ist ge - wiss - lich an der Zeit, dass Got - tes Sohn wird kom - men  
in sei - ner gro - ßen Herr - lich - keit, zu rich - ten Bös und From - me.  
Da wird das La - chen wer - den teu'r, wenn al - les wird ver - gehn im Feu'r, wie Pet - rus da - von schrei - bet.

### Composer's Note:

*Es ist gewisslich an der Zeit* is a Chorale Suite in three movements on the eponymous Lutheran hymn, whose text explores what might happen to us at the end of life, on the 'Day of Judgement'. It was composed as part of a collaboration with theologian Pf. Dr. Volker Jastrzembski in Berlin, exploring and reinterpreting four 16<sup>th</sup> and 17<sup>th</sup> century hymns for a contemporary context. Through discussions with Humboldt University students, as part of the project, interesting parallels emerged between anxiety in Ringwaldt's text and mental health issues exacerbated by living in the age of social media. This subtext is woven throughout the piece and generated the subtitles for each of the three movements:

*'Ich bin!'* (I am) - *'Bist du?'* (Are you?) - *'Wer bin ich?'* (Who am I?).

The joyful confidence heard at the opening soon dissipates and a creeping anxiety emerges as the second movement approaches, with its change of metre and shifting tonality, around the uncertainty of finding one's name written in the Book of Revelation, tumbling layers increasing as the realisation of descending into hell slowly dawn. Out of an initial fragility, the final movement grows gradually in confidence to end with a joyful affirmation of faith.

*Es ist gewisslich an der Zeit* received its first performance in 2017 as part of an evening service at Golgothakirche, Berlin, interspersed with readings, homily, and congregational singing of the hymn-verses relating to each movement, as well as a setting for organ by Johann Pachelbel and improvised *Vorspiele* (hymn introductions) in both traditional and contemporary styles. This final revised version was completed in 2019 after a period of practice research into organ with live electronics and live looping practice.

### Performance Directions:

During the rehearsal process, the performer should explore and internalise the original hymn-melody to facilitate fluid improvisation using motivic fragments which are derived from it. This piece is intended to be played from the score in conjunction with the supplementary sheet in order that expressing the meaning of the text remains a central part of the realisation, as well as providing an *aide-memoire* for the melody. The given English is a directly-translated, unpoetic text, intended to be a useful interpretation of the original German for performance.

Guidance on interpreting the notation and approaching live looping as a performance practice more generally can be found in: *A Guide to Live Looping*. Working with organ and live looping brings particular challenges because of the uniqueness of each performance context; the constellation of instrument, acoustic, and architecture. While many different solutions can be found to issues of microphone placement and playback, my personal approach centres around transferability and portability between different contexts. A summary of my recent practice research into this can be found in the document: *A Transferable Approach to Organ and Live Electronics* (Hulme, MA, University of Huddersfield, 2020).

# Es ist gewisslich an der Zeit

Chorale Suite for Organ & Live-Looping



## Movement I – ‘Ich bin!’

- |  |   |
|--|---|
| <p>1. Es ist gewißlich an der Zeit,<br/>daß Gottes Sohn wird kommen<br/>in seiner großen Herrlichkeit,<br/>zu richten Bös und Fromme.<br/>Dann wird das Lachen werden teu'r,<br/>wenn Alles wird vergehn in Feu'r,<br/>wie Petrus davon schreibt.</p> <p>2. Posaunen wird man hören gehn<br/>an aller Welten Ende;<br/>darauf bald werden auferstehn<br/>all Toten gar behaende.<br/>Die aber noch das Leben han,<br/>die wird der Herr von Stunden an<br/>verwandeln und erneuen.</p> | <p>It is certainly high time,<br/>that God's Son should come<br/>in his great splendour<br/>to judge evil and piety<br/>Then the laughing will become expensive<br/>when/if everything will be consumed by fire<br/>as Peter wrote about.</p> <p>Trumpets will be heard<br/>at the end of all worlds;<br/>soon after this will rise<br/>all the agile dead.<br/>Those who still live, however,<br/>from thenceforth the Lord will<br/>transform and renew them.</p> |
|--|---|

## Movement II – ‘Bist du?’

- |   |  |
|---|--|
| <p>3. Danach wird man ablesen bald,<br/>ein Buch, darin geschrieben<br/>was alle Menschen, Jung und Alt.<br/>auf Erden je getrieben.<br/>Da denn gewiß ein jedermann<br/>wird hören, was er hat getan<br/>in seinem ganzen Leben.</p> <p>4. O weh demselben, welcher hat<br/>des Herren Wort verachtet<br/>und nur auf Erden früh und spät<br/>nach großem Gut getrachtet,<br/>Er wird fürwahr gar schlecht bestehn,<br/>und mit dem Satan müssen gehn<br/>von Christus in die Hölle.</p> | <p>Soon afterwards will be read,<br/>a book, in which is written,<br/>what all people, young and old,<br/>have ever done on earth.<br/>There and then, undoubtedly, the everyman will<br/>hear, what he has done<br/>in his whole life.</p> <p>O woe betide the person who has<br/>defied the word of the Lord<br/>and on earth, early and late,<br/>only considered gathering possessions.<br/>His passing will, in truth, be really bad,<br/>and with Satan he must go<br/>away from Christ into hell.</p> |
|---|--|

## Movement III – ‘Wer bin ich?’

- |   |   |
|---|---|
| <p>5. O Jesu, hilf zu selben Zeit,<br/>von wegen deiner Wunden,<br/>daß ich im Buch der Seligkeit<br/>werd eingezeichnet funden.<br/>Daran ich denn auch zweifle nicht,<br/>denn du hast ja den Feind gericht't,<br/>und meine Schuld bezahlet.</p> <p>6. Derhalben mein Fürsprecher sei,<br/>wenn du nun wirst erscheinen,<br/>und ließ mich aus dem Buche frei,<br/>darinnen stehn die Deinen,<br/>auf daß ich, sammt den Brüdern mein,<br/>mit dir geh in den Himmel ein,<br/>den du uns hast erworben.</p> <p>7. O Jesu Christ, du machst es lang<br/>mit deinem jüngsten Tage,<br/>den Menschen wird auf Erden bang,<br/>von wegen vieler Plage;<br/>komm doch, komm doch, du Richter groß,<br/>und mach uns in Gnaden los<br/>von allem Übel. Amen!</p> | <p>O Jesus, help me at this same time,<br/>through your wounds,<br/>that in the book of salvation<br/>I shall find myself written.<br/>About this I have no doubts,<br/>as you have already judged the enemy,<br/>and paid the price of my sin.</p> <p>Therefore be my advocate,<br/>when you will appear,<br/>and read me out of the book into freedom,<br/>in which those who belong to You are written,<br/>because of this I, together with my brothers,<br/>will go with You into heaven,<br/>and this you have bought for us.</p> <p>O Jesus Christ, You draw it out a long time<br/>with Your judgement days,<br/>the people on earth will be afraid<br/>because of many plagues (struggle),<br/>Come nevertheless, come, You great judge<br/>and in your mercy free us<br/>from all evil. Amen!</p> |
|---|---|

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# Live Looping Notation







## Live Looping

	Start looper
	Stop looper
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	Play & loop directly
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	Overdubbing at performer's discretion



## Guide to colour-coding

red	record
orange	overdub
green	play
blue	audio effects are applied
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brown	ad lib. (suggested material/action)

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	Overdub onto Track 1
	Play Track 1
	Play Track 1 with an effect applied
	Stop Track 1
	Play Track 1 ad lib.



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	with audio effects applied


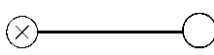

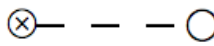
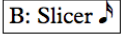


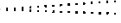

## Examples of symbols used in combination

	Record > Play (loop)
	Record > Stop (without playing)
	Overdub > Play (loop)


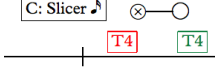

## General notation

	Ad lib. reiterations of looped material and/or improvised material
	Audible looped material where a visual cue in the score is helpful
★ <sub>1</sub>	Specific suggestion for live looping practice given elsewhere on the page, usually at start
M2	Two 'measures', indicating the number of bars to be preset onto each track

## Electronic effects

	Apply effect		Duration of specified effect
	Release effect		Same but effects ad lib.
	Description of effect		Pre-prepare a change for a subsequent point in the score
	Apply effect to a specific track		
	Increase intensity of effect		
	Decrease intensity of effect		

## Example of symbols used in combination

	Indicates where an effect will be applied to live part		Apply <i>Slicer</i> effect at a semiquaver rate & Record on Track 4 then Play
	Indicates specific point of change		



Mvt. I - Es ist gewisslich an der Zeit,  
Chorale Suite for Organ with Live Looping

- 1 Es ist gewisslich an der Zeit, dass Gottes Sohn wird kommen.  
in seiner großen Herrlichkeit, zu richten Böses und Frommen.  
Dann wird das Lachen teuer, wenn Alles wird vergehn in Feuer, wie Petrus davon schreibt
- 2 Posaunen wird man hören gehn an aller Welt ihr Ende;  
darauf bald werden aufstehen all Toten gar behende.  
Die aber noch das Leben han, die wird der Herr von Stunden an verwandeln und verneuen

IFX A: Slicer (P7  )
IFX B: Distorsion (a 'distressed brass' sound)
IFX C: Reverb

T1: M8 Rev off / FX off
T2: M2 Rev off / FX off
T3: M4 Rev off / FX off
T4: M2 Rev off / FX on
T5: M2 Rev off / FX ff

TFX A: Filter TFX B: Transpose (+5) TFX C: Beat Shift / <i>Beat Repeat</i> (♫)
--

Man: Pr.8', 4'  
Ped: 16', 8'

**N.B:**

- \*1 Feel 1 as 3 throughout in order to map the anacrusis of the original hymn-melody successfully to the looper's temporal grid.
- \*2 If necessary, overdub this loop a 2nd time with *Guitar to Bass* effect
- \*3 Reduce mic input towards the end of each phrase here and disable microphone as quickly as possible to avoid sonic challenges, given the sensitivity and volatility of the distortion effect.
- \*4 Breathly 'Kommen' with snaredrum-like beatbox *K* as in *Kh*

[illegible]

Memory no. \_\_\_\_\_  
Record *no* empty loops

T1: M2 Rev off / FX on  
T2: M4 Rev off / FX on  
T3: M2 Rev off / FX on  
T4: M2 Rev off / FX on  
T5: M1 Rev off / FX on

TFX A: Filter  
TFX B: Transpose (+5)  
TFX C: Beat Shift / Beat Repeat (♫)

IFX A: Filter  
IFX B: Guitar to Bass/Reverb  
IFX C: Slicer (P10 ♪/P17♪)

N.B:

Melodic material suggesting the original hymn melody should be played *quasi-improvisationally* throughout, with *rubato* & expressive ornamentation

- \*1 twisty-turny improvised melody, developed from original hymn-melody and ornamented variation at A, rising in pitch and progressing from left to right hands, using specific pitches given in each bar.
- \*2 Breathy *nick-tack* with fairly wet r's and middle-soft -ck's
- \*3 Dotted dim. indicates gradual change from filtering high to low frequencies
- \*4 Breathy *Zeit* with prolonged Z (German-style *Ts*) and wet, percussive *t*
- \*5 Improvise as at \*1, *getter deeper* and quieter: "und mit dem Satan müssen gehn von Christus in die Hölle."

Man: Strings 8'  
Ped.: 16', 8'

♩ = 70

## "Bist du?"

Mvt. II - Es ist gewisslich an der Zeit  
Chorale Suite for Organ with Live Looping

3. Danach wird man ablesen bald ein Buch, darin geschrieben,  
was alle Menschen, jung und alt, auf Erden je getrieben;  
da denn gewiß ein jedermann wird hören, was er hat getan in seinem ganzem Leben.

4. Oh weh dem Menschen, welcher hat des Herren Wort verachtet  
und nur auf Erden früh und spät nach großem Gut getrachtet!  
Er wird fürwarh gar schlecht bestehen und mit dem Satan müssen gehn von Christus in die Hölle.

The musical score is written for a multi-staff instrument, likely an organ or a digital synthesizer with looping capabilities. It consists of several staves:

- Manuals:** The top staff, featuring a treble clef and a key signature of one flat. It includes a tempo marking of ♩ = 70 and a dynamic marking of *mp*. The staff is divided into two sections by a double bar line. The first section contains a melody with various ornaments and a key signature change to two flats. The second section contains a melody with a key signature change to one sharp and a dynamic marking of *pp*.
- Pedals:** The second staff, featuring a bass clef and a key signature of one flat. It includes a dynamic marking of *mp* and a key signature change to two flats. The staff is divided into two sections by a double bar line. The first section contains a melody with various ornaments and a key signature change to one sharp. The second section contains a melody with a key signature change to one flat and a dynamic marking of *pp*.
- Loop/FX:** The third staff, featuring a treble clef and a key signature of one flat. It includes a dynamic marking of *mp* and a key signature change to two flats. The staff is divided into two sections by a double bar line. The first section contains a melody with various ornaments and a key signature change to one sharp. The second section contains a melody with a key signature change to one flat and a dynamic marking of *pp*.
- Vox/Perc.:** The fourth staff, featuring a treble clef and a key signature of one flat. It includes a dynamic marking of *mf* and a key signature change to two flats. The staff is divided into two sections by a double bar line. The first section contains a melody with various ornaments and a key signature change to one sharp. The second section contains a melody with a key signature change to one flat and a dynamic marking of *pp*.

The score includes various musical notations, including notes, rests, ornaments, and key signature changes. It also includes dynamic markings such as *mp*, *pp*, *mf*, and *f*. The score is divided into several sections by double bar lines and includes various annotations and instructions for the performer.

Annotations and instructions include:

- "improvise melody: See \*1" (Manuals, second section)
- "poco a poco crescendo" (Manuals, second section)
- "improvise melody as at \*1 but using specific, given pitches in treble register" (Manuals, second section)
- "last time" (Manuals, second section)
- "Change IFX B from Guitar to Bass to Reverb" (Loop/FX, second section)
- "Change IFX A from Chorus to Filter" (Loop/FX, second section)
- "play ad lib. using either whole phrase, or fragments thereof alternating rhythmic displacement but retaining sequence of notes" (Vox/Perc., first section)
- "control Filter FX so that it moves from high to low frequencies as the melody falls in each phrase, then reset for next iteration" (Loop/FX, first section)
- "continue ad lib., improvising melodically using these pitches and travelling towards..." (Vox/Perc., second section)
- "continue ad lib., as at \*4, travelling towards..." (Vox/Perc., second section)
- "poco a poco diminuendo" (Loop/FX, second section)
- "Undo last T5 loop (Zap)" (Loop/FX, second section)
- "T1", "T2", "T3", "T4", "T5" (Loop/FX, various sections)
- "T1", "T2", "T3", "T4", "T5" (Vox/Perc., various sections)
- "T1", "T2", "T3", "T4", "T5" (Loop/FX, various sections)
- "T1", "T2", "T3", "T4", "T5" (Vox/Perc., various sections)



# **The Tyger**

for soprano and loop artist

Pam Hulme

# The Tyger

for soprano and loop artist

Music: Pam Hulme (\*1979)

Text: William Blake (1757-1827)

*The Tyger* was composed to be performed in a concert at Pfingstkirche, Berlin, alongside John Tavener's choral work *The Lamb* (1982). Both pieces set poems written by William Blake in the late eighteenth century, against the backdrop of the Industrial Revolution, and are imbued with anxiety around the societal changes taking place at that time. *The Lamb* and *The Tyger* were written as companion texts, evident in Blake's referencing of *The Lamb* in the fifth stanza of *The Tyger*, with *The Lamb* published first as part of the 1789 collection *Songs of Innocence* and *The Tyger* in 1794 as part of the collection *Songs of Innocence and Experience*. Together they explore the paradox inherent in Christianity of God being at once the 'meek and... mild... little child' described in *The Lamb* and the dreadful Creator lurking in *The Tyger*.

## The Tyger

Tyger Tyger, burning bright,  
In the forests of the night;  
What immortal hand or eye,  
Could frame thy fearful symmetry?

In what distant deeps or skies.  
Burnt the fire of thine eyes?  
On what wings dare he aspire?  
What the hand, dare seize the fire?

And what shoulder, & what art,  
Could twist the sinews of thy heart?  
And when thy heart began to beat,  
What dread hand? & what dread feet?

What the hammer? what the chain,  
In what furnace was thy brain?  
What the anvil? what dread grasp,  
Dare its deadly terrors clasp!

When the stars threw down their spears  
And water'd heaven with their tears:  
Did he smile his work to see?  
Did he who made the Lamb make thee?

Tyger Tyger burning bright,  
In the forests of the night:  
What immortal hand or eye,  
Dare frame thy fearful symmetry?

## The Lamb

Little Lamb who made thee  
Dost thou know who made thee  
Gave thee life & bid thee feed.  
By the stream & o'er the mead;  
Gave thee clothing of delight,  
Softest clothing woolly bright;  
Gave thee such a tender voice,  
Making all the vales rejoice!  
Little Lamb who made thee  
Dost thou know who made thee

Little Lamb I'll tell thee,  
Little Lamb I'll tell thee!  
He is called by thy name,  
For he calls himself a Lamb:  
He is meek & he is mild,  
He became a little child:  
I a child & thou a lamb,  
We are called by his name.  
Little Lamb God bless thee.  
Little Lamb God bless thee.

## Performance Directions:

The looped material in *The Tyger* is built from percussive fragments of the text and short melodic phrases which, particularly when manipulated electronically, weave together into an accompaniment for the singer that expresses the fearful anxiety running through William Blake's poem.

Both performers should listen to the looper on headphones throughout and remain in sight of each other so that the loop artist can give certain cues gesturally. The level of the playback must be audible to the loop artist in order for them to balance the looped material with the voice in such a way that it is sometimes unclear which sound is live and which is recorded, thereby giving an impression of manipulating the musical surface. Guidance on interpreting the notation, and approaching live-looping as a performance practice more generally, can be found in the document: *A Guide to Live Looping*. As well as live looping equipment and a playback system, performing this piece requires one dynamic microphone as an input to the looper, placed on a stand at 90° to the soprano's mouth so that she can influence the quality of the looped sounds by the extent to which she turns her head towards the microphone.

Pam Hulme, Berlin, 2018.

# A Guide to Live Looping

*Live looping: The recording and playback of music in real-time using either dedicated hardware devices such as loopers or samplers, or software with an audio interface.*

Live looping is a performance practice where the cyclical layering of live sound, in conjunction with electronic manipulation, creates a sonic environment which seemingly mirrors contemporary life; a symbiosis of the analogue and the digital. Within the repetitive matrix of live looping improvisation is crucial in maintaining 'liveness', but increasing musical complexity requires pre-planning, in other words, composition.

## General approach:

In live looping composition a nexus of loops built out of a particular tone-row and rhythmic cell has been 'composed out' into a partially fixed work. The score represents a framework within which the performer journeys through the musical material and, ideally, loops should be taken surreptitiously as part of a meaningful piece of music, rather than as an exercise in live looping technique. Although the sonic nature of the loops and how they fit together is crucial to realising the composition, the performer is encouraged to explore different approaches to organising the musical material, both for expressive and practical reasons. This may include: adjusting the structure of the piece when recording loops, or curating their playback; subjectivity in manipulating the sound using electronic effects; improvising melodic or rhythmic material in certain passages. As a general approach to melodic and rhythmic improvisation, the notated material should be taken as a starting point and deconstruction techniques should form the basis of further development and invention. Fluency with the technology is paramount so that unexpected sonic occurrences can be creatively integrated into the performance, rather than being experienced as a mistake.

The notational approach for live looping outlined below attempts to record and communicate the delicate balance between the fixed and the free, including details of fixed rhythmic, melodic, and technical elements, as well as setting parameters for improvisation. The score is playable using a range of live looping set-ups and has been realised in performance using both the Boss RC-505 Loop Station and Ableton Live with laptop and controllers. Much of the language used comes from the Boss RC-505 and therefore needs reinterpreting for use in other contexts, e.g. *clips* instead of *loops* in Ableton Live. Similarly, audio effects are split into *IFX ABC* and *TFX ABC*, meaning effects which are applied to the live sound (Input-FX) and effects which are applied to the recorded loops during playback (Track-FX). Similar outcomes in Ableton Live, for example, are achieved by allocating effects to SEND channels.

## Tips for effective live looping performance:

Before beginning, listening to a few bars of metronome is crucial for acclimatisation. Where there are multiple performers, everyone should hear the click continuously on headphones with the loop artist giving gestural signals as appropriate to avoid ambiguity about the looper's 1st beat of the bar.

If the piece starts on an upbeat (implied or actual) it is important to trick one's own mind into believing that beat 4 is beat 1. One approach would be to clearly count: 1 2 3 4 - **4** 1 2 3 - **4** 1 2 3 - **4**... etc. Whether using hardware or software for live-looping, the fixed temporal matrix is easier to manipulate electronically when the piece truly starts on **1** even if this appears aurally to be beat 4.

In order to achieve the effective recording of loops, so that they have sonically clean beginnings and endings without audible glitches, I suggest the following:

When recording a loop which starts on the first beat of the bar, pressing Record slightly beforehand is advisable, e.g. on beat 3½ in a bar of 4/4, initiating 'Ready-to-Record' mode, often signified by a flashing red light or icon.

Similarly, if possible, pre-set the length of the loop to be recorded and, after this timespan has elapsed in Record mode, allow it to switch automatically into Overdub mode for a beat or so while continuing to generate the sound source until pressing Play/Stop.

Once recorded, the effective Start/Stop of individual loops is often best achieved by using faders to control their volume, leaving them playing silently in the background.

# Live Looping Notation







## Live Looping

	Start looper
	Stop looper
	Record (single track)
	Overdub (single track)
	Automatic Overdub (preset loop-length)
	Play (single track)
	Play & loop directly
	Stop (single track)
	Recording at performer's discretion, (e.g. responding to effect or mic levels)
	Overdubbing at performer's discretion



## Guide to colour-coding

red	record
orange	overdub
green	play
blue	audio effects are applied
pink	pre-prepare effect or looping
brown	ad lib. (suggested material/action)

## Specifying tracks

	Record onto Track 1 <i>(for example)</i>
	Overdub onto Track 1
	Play Track 1
	Play Track 1 with an effect applied
	Stop Track 1
	Play Track 1 ad lib.



Smaller boxes indicate tracks continuing to play without further action (e.g.):

	without audio effects applied
	with audio effects applied


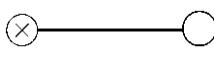

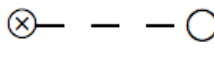
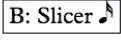


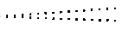
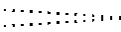
## Examples of symbols used in combination

	Record > Play (loop)
	Record > Stop (without playing)
	Overdub > Play (loop)


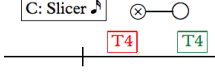

## General notation

	Ad lib. reiterations of looped material and/or improvised material
	Audible looped material where a visual cue in the score is helpful
★ <sub>1</sub>	Specific suggestion for live looping practice given elsewhere on the page, usually at start
M2	Two 'measures', indicating the number of bars to be preset onto each track

## Electronic effects

	Apply effect		Duration of specified effect
	Release effect		Same but effects ad lib.
	Description of effect		Pre-prepare a change for a subsequent point in the score
	Apply effect to a specific track		
	Increase intensity of effect		
	Decrease intensity of effect		

## Example of symbols used in combination

	Indicates where an effect will be applied to live part		Apply <i>Slicer</i> effect at a semiquaver rate & Record on Track 4 then Play
	Indicates specific point of change		

Memory no. \_\_\_\_\_  
Pre-record empty loops on:  
T1, T3, T5

T1: ♩ Rev off / FX off  
T2: ♩ Rev on / FX off  
T3: ♩ Rev off / FX off  
T4: ♩ Rev off / FX on  
T5: ♩ Rev off / FX on

# The Tyger

for soprano and loop artist

IFX A: Phaser  
IFX B: Guitar-Bass / Slicer (P17 ♩)  
IFX C: Slicer (P11 ♩) / Delay (♩)

TFX A: Filter  
TFX B: Transpose (0)  
TFX C: Beat Shift / Beat Repeat (♩)

Music: Pam Hulme (\*1979)  
Text: William Blake (1757-1827)

**Andante**

Soprano

Ty-ger! Ty-ger! burn-ing bright\_\_\_ (t) In the for-ests of the nigh - t (hahhhhh) What im-mor-tal hand or eye Could frame thy fear-ful sym-me-try? B-bm

Looper/FX

10 **mp** **fp** **cresc.** **fp** **dim.** **fp**

Sop.

In what dis-tant deeps or skies\_\_\_ Burnt the fire of thine eyes\_\_\_ On what wings dare he as - pire? What the hand dare seize the fire?\_\_\_

Lp./FX

change IFX B to Slicer

change IFX C to Delay

18 **mf** **fp** **f**

Sop.

And what shoul-der, and what art, Could twist the\_ si - news of thy heart?\_\_\_ And when thy heart be-gan to bea - t,

Lp./FX

TFX A, C: Filter, Beat Shift

ad lib., building intensity

ad lib., quieter, but still menacing, with disruptive use of timing and filtering effects

(etc.)

25 **mp**

Sop.

What dread hand? and what dread fee - t? What the hammer? what the ch - ain? In\_ what fur-nace was thy brain?

Lp./FX

TFX A, B, C: Filter, Transpose, Beat Shift

ad lib., erratic, panicky

TFX A, C: Filter, Beat Shift

ad lib., rhythmic, machine-like

**\*1:** Suggest recording over into the next beat (overdub) to reduce the risk of a rhythmic glitch in the loop



33

Sop.

What the an-vil? what dread grasp *(sss)* *(p)* Dare its dead-ly ter-rors clasp? *mf* When the stars threw down their spears, *f* And wa-ter'd hea-ven with their tears,

Lp./FX

(+Slicer) (filter, beat shift) IFX C: Slicer TFX B: Transpose (0) (+12) IFX C: Delay

41

Sop.

Did he smile his work to see? *subito p* Did he who made the Lamb make thee? *piu lento, espress. rit. a tempo*

Lp./FX

TFX A: Filter T5 ad lib.: erratic bursts, threatening TFX C: Beat shift T5 ad lib.: frightening, confusing TFX C: Beat shift T5 ad lib.: simile TFX A, C: Filter, Beat shift ad lib. T3 T2 T1 PPP

48

Sop.

*fearfully, anxiously* *p* Ty - ger! Ty - ger! burn - ing bright In the for - ests of the night, *ad lib.: anxiously, erratically, as if representing the inner, fearful, voice*

Lp./FX

T3 T2 T1 *p* *p* T2

55

Sop.

What im - mor - tal hand or eye Dare frame thy fear - ful sym - me - try? *Enter on beat 2 or 4 (aural cue: 2x B-bm)*

Lp./FX

T2 Reverse OFF change TFX C to Beat Repeat TFX C: Beat Repeat TFX C: T3 T2 T1 *pp*

for organ & live looping

T1: M3 / T2: M3 / T3: M3 / T5: 2 beats |  
IFX A: Filter / IFX B: Guitar-to-Bass / IFX  
C: Slicer

Improvisation using the recorded loops and echoes of BWV 542 should occur in the spaces between the notated passages.

The image displays a complex musical score for a piano and organ ensemble. The score is organized into several systems, each containing multiple staves. The top system includes staves for 'Vox/Percussion', 'Loop/FX', 'Org.' (Organ), and 'Loop/FX'. The organ part is written in G major and 4/4 time, with a tempo of 68-78 BPM. The piano part is written in G major and 4/4 time, with a tempo of 68-78 BPM. The score includes various musical notations, such as notes, rests, and dynamic markings. The organ part is played on a Hammond organ, and the piano part is played on a grand piano. The score is divided into two main sections, with the second section starting at measure 2. The organ part is played on a Hammond organ, and the piano part is played on a grand piano. The score includes various musical notations, such as notes, rests, and dynamic markings. The organ part is played on a Hammond organ, and the piano part is played on a grand piano. The score is divided into two main sections, with the second section starting at measure 2.

# neural (*dis*)tortion

piece for clarinet and imaginary loop machine

Pam Hulme

## **neural (*dis*)torsion**

### **piece for clarinet and imaginary loop machine**

What is a memory? How do thoughts form in the brain and become a memory? How do we experience this revisiting process?

Sometimes it feels as if memories are on a loop; the retelling of a story or fragments of existence; an image, a sound, a smell, a feeling.

When we play memories 'on loop' do they have the same characteristics each time, or do they change? How do we know? In the replaying, do we somehow keep track of the changes?... the distortion, disruption, manipulation... internal / external? Or is it lost, subsumed into a new narrative? An imperfect human reproduction of reality, sequencing sensory perceptions into linear story-telling. A digital film susceptible to file corruption? An analogue film distorting over time, weakened with each replay?

This piece begins with the fluttering of neurons: the first flickers of thought, becoming recollection, forming into a memory... into this particular memory. The musical characteristics which make it identifiable as itself are manifold, as are the parameters of a memory. Once reawakened, this musical memory plays for a while, with its different elements shifting between the musical foreground and background; sometimes played, sometimes not, but often heard and always present. They play as if they are separate tracks recorded into a loop machine, the unrelenting pulse of an imagined click-track mirroring the non-stop of the everyday. The ever-forward-march of thought... of thinking... of remembering... until it doesn't.

'Posterior cortical atrophy (PCA) is a neurodegenerative syndrome that is characterized by a progressive decline in visuospatial, visuoperceptual, literacy and praxic skills<sup>i</sup>.' Typically, PCA begins in the back of the brain and gradually moves towards the front, meaning that while problems with visual perception often lead sufferers to seek diagnosis, it presents differently in each sufferer. The exact trajectory of neural atrophy in PCA is impossible to predict, and further symptoms can include loss of speech, taste, touch, movement, the ability to sequence information, form memories, recall memories, and experiencing elaborate hallucinations. Amongst all of this, even in advanced stages of degeneration, the sufferer retains their sense of self and a level of insight into what is going on in their brain. My mother was diagnosed with PCA in 2007 and is proud to have been involved with early research in this area of neurology because it helped her make sense of the seemingly senseless. PCA is cruel; it is also fascinating.


The beat goes on and the tension builds, the loops dance around each other in ever-more complex layers of sound and imagined sound. There are diversions, different corners of this memory explored, magnified through imagined *beat repeat* and *slicer* effects until... a neural abrasion: the memory jars. Suddenly it doesn't make sense; thought, memory, narrative, perception, the self. The sequence of thought is lost amid the distress of this first neural crisis, but is it still rescuable? Perhaps. The memory attempts to resurrect itself, grasping at thoughts, fragments, splinters. At first boldly, then timidly, fearfully; trying to deny, to mask what might just have happened. But now there is doubt, and afterwards the doubt itself remains as a fragmentary imprint. This small, looping, fearful doubt-splinter, sometimes played, sometimes not, but often heard and always present. The neural pathway is distorted, the memory corrupted. The joy of this memory now discoloured by the additional layer of doubt, worry, fear. This brain is degenerating, faster than most, younger than most, more unpredictable than most. The memory gathers its thoughts and reforms itself, though will always be changed. The hesitant rhythm, squashed tonality and shifting multiphonic timbres widen the gap between you and other people. This is how you experience the world now, but this too will change; distort. Consciousness is constantly twisting and untwisting. Torsion is your new reality: (*dis*)torsion.

## Performance directions:

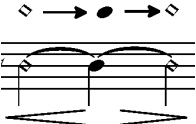
This piece is heavily influenced by bass-driven electronic dance music and the heavy-treaded, bulky, repetitive cross-rhythms of early hip-hop. Therefore, the beat remains a foursquare 4/4 pattern almost throughout with heavy kick drum impulse on '1' and sharp snare drum attacking beat '3', occasionally punctuated by tight syncopated hi-hats. Within this framework beat '1' should be hyper-punctual, as if produced by a drum machine, but against this the melodic triplets often heard on beat '4' should drag a little as if they belong to an imperfect, analogue sample in an early East Coast hip-hop record.

Although composed for one clarinet player, the score is notated using two staves: *Clarinet* and *Clarinet Percussion*. This is intended to clarify where sounds are to be played using fingerings (*Clarinet*) and where percussive sounds should be played either without fingerings or with those decided by the performer to best communicate the required percussive sound, (*Clarinet Percussion*). The only exception to this is in the case of *slap tongue* and *slap tone*, where both effects are notated on the *Clarinet* stave, despite the optimal *slap tongue* timbre being a "tight 'click' sound, as dry and as unpitched as possible" (see notes below).

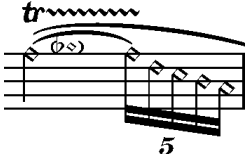
## Extended timbral effects:



Air sounds




Gradual timbral change from air sound to full sound and back again, focussing on the micro-changes between the timbres.

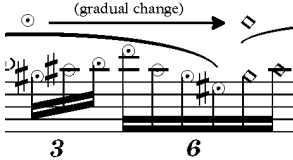


5

Air sounds on a consistently fast trill, followed by fast moving notes. Noise from the pressing-down of new keys is desirable, but ideally not louder than the air-sounds themselves.



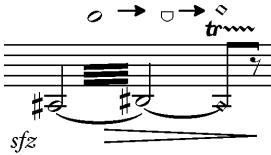
Rough, breathy tone, but voiced; halfway between air sound and full sound.



(gradual change)

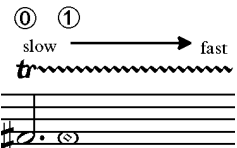
3 6

Gradual timbral change from rough, breathy, 'half-voiced' tone to air sound.



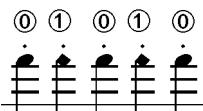
sfz

Gradual change during a tremolo from full tone to half lip-pressure to air sound, followed by a short, fast-moving trill.



① ①  
slow → fast

Gradual oscillation between different timbres, achieved using alternative fingerings with a gradual accelerando through the note length.




① ① ① ① ①

Timbral oscillation imitating the *slicer* effect found in electronic dance music and therefore most effective if the *staccato* is as short as possible with significant 'dark / light' contrast between the timbres.


## Percussive, beatboxing sounds:

The first beat of each bar in the rhythmic sections is crucial to achieving the 'imaginary loop machine'. Beat one should always be very present, heavy even, regardless of dynamics and indeed whether any music is notated, with an emphatic kick drum ever-present underneath the texture or in the imagination. The following four types of effect occur on beat '1':



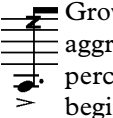
slap tone

Looser percussive sound with a hint of the notated pitch in the mix but without producing a clear, voiced pitch.




slap tongue (click)

Tight 'click' sound, as dry and as unpitched as possible.




Growl effect, coarse, aggressive sound with percussive edge at the beginning of the note.




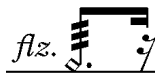
37

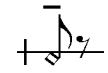
ff

Accented silence.

 'kh' is a fast, strong burst of air through the instrument with a long 'k' produced towards the back of the mouth with the back of the tongue touching the soft palette, imitating a beatboxed snare: 'kh'.  
kh

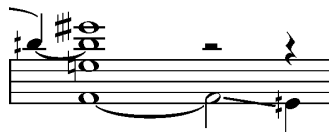
 'kha!' is similar to 'kh' but with more air and diaphragmatic force behind it. After the initial kick, the mouth should form (as much as possible) into an 'a' vowel shape; a as in the English 'apple' or 'bat'.  
kha!

 'rrr' is an emphatic flutter-tongue effect, imitating a tight, lo-fi, snare drum roll such as those produced by early drum machines or 80's synthesisers.  
rrr

 'whu' is a powerful breath sound punched out from the diaphragm through a very open wind-channel. Though unvoiced it should have a deep timbre.  
whu

### Multiphonics:

Multiphonics in this piece occur at moments of neural and/or emotional crisis and represent grappling between the memory (past) and consciousness (present). Gradual changes from pure tone to multiphonic should be smooth, but the tone-quality of the multiphonic itself should not necessarily be clean or beautiful, rather an expressive, aural depiction of the emotions which emerge around the neural crisis; distress, sadness, worry, pain, confusion, fear etc.



Note values used to notate these points of neural crisis are approximations and exact durations are to be decided by the performer according to factors such as expression and acoustics, only that the relative duration between different crises are honoured / respected.

Between these points of neural crisis general pauses are notated using a silent 2/4 with fermata. These pauses should be of varying duration, decided by the performer according to expression, acoustic etc., but should not be exactly the length of, or longer than, a full 4/4 bar as the intended effect is one of disquieting, temporal uneasiness.

Pam Hulme, December 2017

<sup>i</sup> Crutch, S. J. et al., *Posterior Cortical Atrophy*, The Lancet Neurology, Vol. 11:2, pp.170-178, Feb 2012, [www.ncbi.nlm.nih.gov/pmc/articles/PMC3740271/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3740271/)

neural (*dis*)tortion  
piece for clarinet and imaginary loop machine

Pam Hulme

♩ = 88

*frei, ungezwungen*

*frei, ungezwungen*

Clarinet in Bb

Cl.

Cl. Perc.

13

*a tempo*  
*immer bewegt aber taktmässig*

18

slap tone

whu kh whu kh kha kha

23 Cl. slap tongue (click) +

Cl. Perc. subito *p* *flz.* *mf* *subito p* *flz.*

rrr kh! kh! kh! rrr

26 Cl. treibend slap tone

Cl. Perc. *mf* growl... 3

kh! kh! kha! kha!

29 Cl. lebendig

Cl. Perc. *f* *f* kha! kh! kh! *flz.* rrr



33 *slap tone*

Cl. *ff* *f*

Cl. Perc. *ff* *f* kha! kha! kha! kh! kh! kh!

37 *zunehmend aufgeregt*

Cl. *ff* *sempre ff* ugly growl

Cl. Perc. *ff* kha! kha! kha!

40 *ugly growl*

Cl. *ff* *f* *distressed growl!*

Cl. Perc. *ff* kha! kha!

*molto accel.* *a tempo*

45 *zögerlich* ① ① ① ① ① ① ① ① ①

Cl. *sfz* *pp* *p* *mp* *mf*

Cl. Perc. *p* whu *flz.* rrr rrr rrr

*wieder aufgeregt, aber ängstlich*

49 *slap tone* *f* *ff* *f* *mp*

Cl. *f* *ff* *f* *mp*

54 *rough, half-breathy tone* *beklemmt* *tr* *mf* 5 6 3 6 7 *poco accel.*

Cl. *mf* 5 6 3 6 7

58 *a tempo* *zögerlich* *immer bewegt aber taktmässig* *slap tone* ① ① ①

Cl. *p* *flz.* *p* *kh*

Cl. Perc. *p* rrr kh

65

slap tone

Cl.

Cl. Perc.

kh kh kh whu rrr kha

*mp* *p* *fz.* *mf*

frei, ungezwungen

68

Cl.

Cl. Perc.

kha  
mp

kha rrr  
p

whu  
p

mp

flz.

pp

mf

p

2/4

72

Cl.

Cl. Perc.

*pp* *p* *pp* *p* *pp* *pp*

*pp* kh

*mit Bewegung, aber gedämpft*

*a tempo*

*slap tongue (click)*

*slap tongue (click)*

*(gradual change)*

77 *slap tone*

Cl.

Cl. Perc.

kh

79 *allmählich allein*

Cl.

Cl. Perc.

kh! kh! kh! kh flz. rrr

82 *frei, schwächer*

Cl.

Cl. Perc.

pp kh

# **I lift my eyes and see shadows on the hills**

Meditation on Psalm 121 for organ and acoustic space

*in memoriam*


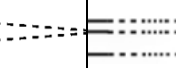
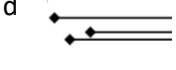
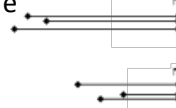
Pam Hulme

# I lift my eyes and see shadows on the hills

Meditation on Psalm 121 for organ and acoustic space

**Composer's Note:** "Just put one foot in front of the other..." It was the waiting, the not-knowing. In Berlin, waiting to hear if he would wake from the coma, I sought solace in the usual places; my bicycle seat, the organ bench. I couldn't concentrate; even simple repertoire was beyond me and this only compounded my distress. My brain was mushy and my fingers seemed not to work. I began just to put one hand in front of the other, focussing on a musical process I established for myself, only able to notice the physical movement of my fingers and the sound of the organ moving around the space. In my thoughts were half-remembered fragments of Psalm 121, whose hills became the Yorkshire moors I would soon see on my journey home, descending into Manchester. Even now, I lift my eyes and see shadows on those hills."

**Performance Directions:** The performer should try to play the acoustic space as a separate instrument in duet with the organ. The cellular pattern which passes between the hands on different manuals should be internalised so that it becomes a quasi-automatic process. This meditative approach should be focussed primarily on how the sounds move around the space, allowing thoughts to emerge around the text from Psalm 121, the hills pictured on the score, and the performer's own sensory perception: How does the body feel when switching between manuals, octaves, registrations etc.?

<p>a</p> 	<p>A collection of pitches (cell) played approximately a crotchet apart, chosen according to the rules below, which are sustained as an approximately minim-length cluster:</p> <p>1<sup>st</sup> pitch should duplicate and then replace one of the 3 notes in the preceding cluster, either at exact pitch or at 8ve above/below</p> <p>2<sup>nd</sup> pitch should be a 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup> or 7<sup>th</sup> higher (at performers discretion)</p> <p>3<sup>rd</sup> pitch should fall from the 2<sup>nd</sup> pitch by a tone or semitone, key signature</p>
<p>b</p> 	<p>c</p> <p><i>Staggered diminuendo</i> achieved by gradually dispersing the 3-note cluster of one cell into the 3 notes of the subsequent cluster, blended by resonances in the acoustic:</p> <p>(b) predetermined pitches, or (c) non-predetermined pitches</p>
<p>d</p> 	<p>Inverted version of the cell described in (a), with pitches chosen according to the same rules but travelling in the opposite direction.</p>
<p>e</p> 	<p>The 3-note cluster from one cell is sustained during the formation of a subsequent, inverted cell. The resulting 6-note cluster is sustained for a relatively long time before all the notes across both hands are released simultaneously.</p>

Decisions about pitch in the undetermined 3-note cells should be made without concern for the rules of functional harmony and the tonal implications of choosing one note over another. Duration of fermatas should be determined by listening to the sound in the space, where appropriate, guided by the length of time it takes the performer to silently read the Psalm 121 fragments printed in the score.

**Registration:** At the beginning the organist should select the quietest, most beautiful 8ft stops available and registration choices thereafter should be as well-balanced between the two manuals as possible, remaining uncoupled throughout. *Crescendos* should be achieved by gradually adding multiple stops in the same register, followed by subsequent octaves (4ft, 2ft, etc.), then adding mixtures, reeds etc. at the organist's discretion. Each time a higher octave is added, the starting note of the subsequent cell should be transposed down an octave lower than it's equivalent in the previous iteration; the same process in reverse should apply to *diminuendos*. Anomalies of timbre and spatialization are to be encouraged; e.g. choosing ranks of pipes which speak from different sections of the organ or choosing stops which 'beat' against each other in quieter passages. The trajectory of registration choices made throughout the piece will determine its duration, e.g. a decision to continue looping the cells until a *fortissimo* including trumpets is reached will result in a longer performance than a *fortissimo* consisting largely of principals.

# I lift my eyes and see shadows on the hills

Meditation on Psalm 121 for organ and acoustic space

*in memoriam*



**I**  $\text{♩} = 50$

*pp* I will lift mine eyes unto the hills, whence cometh my help, (continue overlapping clusters throughout) My help cometh from the Lord,

**II** *pp*

who hath made heaven and earth. *pp*

*repeat ad lib. until f*

*poco a poco cresc.* *f* The Lord himself watches over you;

the Lord is your shade at your right hand. *pp*

*repeat ad lib. until ff*

*poco a poco cresc.* *ff* So that the sun shall not strike you by day,

neither the moon by night. *ff*

*repeat ad lib. until mp*

*poco a poco dim.* *mp (dim.)* The Lord shall keep watch over your going out and your coming in,

from this time forth for evermore. *dim.* *poco a poco dim.*

*pp* *rall.* Amen.

**S \_ a \_ \_ / \_ y / \_ \_**

for solo violin

Pam Hulme



# S \_ a \_ \_ / \_ y / \_ \_

for solo violin

“I’ve decided. To tie up my brain.” - “Why?” - “Because it’s not disintegrating.”

The end-phase of neurological degeneration or ‘tying up my brain’, as my mum put it, is terrifying, unpredictable, harrowing, fascinating.

S \_ a \_ \_ / \_ y / \_ \_ explores traces of shared cultural memory, specifically those which emerged in the final week of my Mum’s life. As we sat together with her, the melismatic speech patterns of my family’s regional accent enabled communication long after words, and then word-fragments had gone. Towards the end it seemed as if she sang along to the chorus of an unexpected song from her youth; implausible, perhaps, if not not for this auditory mirage happening twice. What was she trying to say? Something? Nothing? Was she trying to express the meaning of the lyrics to this famous song, in itself a shared cultural memory? Or was she simply remembering the melody and singing along to it in her fragmented, mumbling way? It was impossible to know; soon there would be nothing more to say.

In the dark times  
Will there also be singing?  
Yes, there will also be singing.  
About the dark times.<sup>1</sup>

Woven through S \_ a \_ \_ / \_ y / \_ \_ are melodic fragments and rhythmic gestures inherent in the lilting Wirral accent, plus faint echoes of two songs which were part of that week’s aural tapestry, including the song she \*sang\*. Structurally, the music follows a stream of consciousness where lyrical passages of joyful, fantastical remembering become tinged with and then interrupted by emotions which are triggered by remembering the reality of the situation; at first sadness, then frustration. The sense of Self, of Gaynor Hulme’s inner voice, is strongly present throughout the piece until intermittence gives way to incoherence and, finally, acquiescence. When the opening melody returns in the coda it is as an echo, a memory of the remembering which we shared.

Pam Hulme, February 2019.

## Performance directions



without vibrato



with vibrato



--> make a gradual change (e.g. between types of vibrato, bowing etc.)



circular bowing



*parlando (sotto voce)*: as if spoken by a human voice, with slight imperfections of pitch and rhythm.

<sup>1</sup> Bertolt Brecht, ‘Motto’, (*Svendborg Poems*, 1939)

# S-a-- -y --

for solo violin

Adagio, ma con moto

Pam Hulme

♩ = 60

*p* *mp* *mp* *p*

rit.  $\frac{3}{3}$  sul tasto

Piu mosso, con anima

*p* *mf* *ff*

rit.  $\frac{6}{3}$  sul tasto

*mf* *p* parlando (timidly)

Tempo I, animando

*mf* *f* parlando *pizz.* *vib.* *arco, s.t.* *pizz.* *arco* *pizz.*

vib. arco, s.t. pizz. arco, s.t. rit.  $\frac{3}{3}$

*pp* *(mf)* *(mp)* *pp*

Tempo I, espressivo

*pp* *p* *ppp*

in memoriam